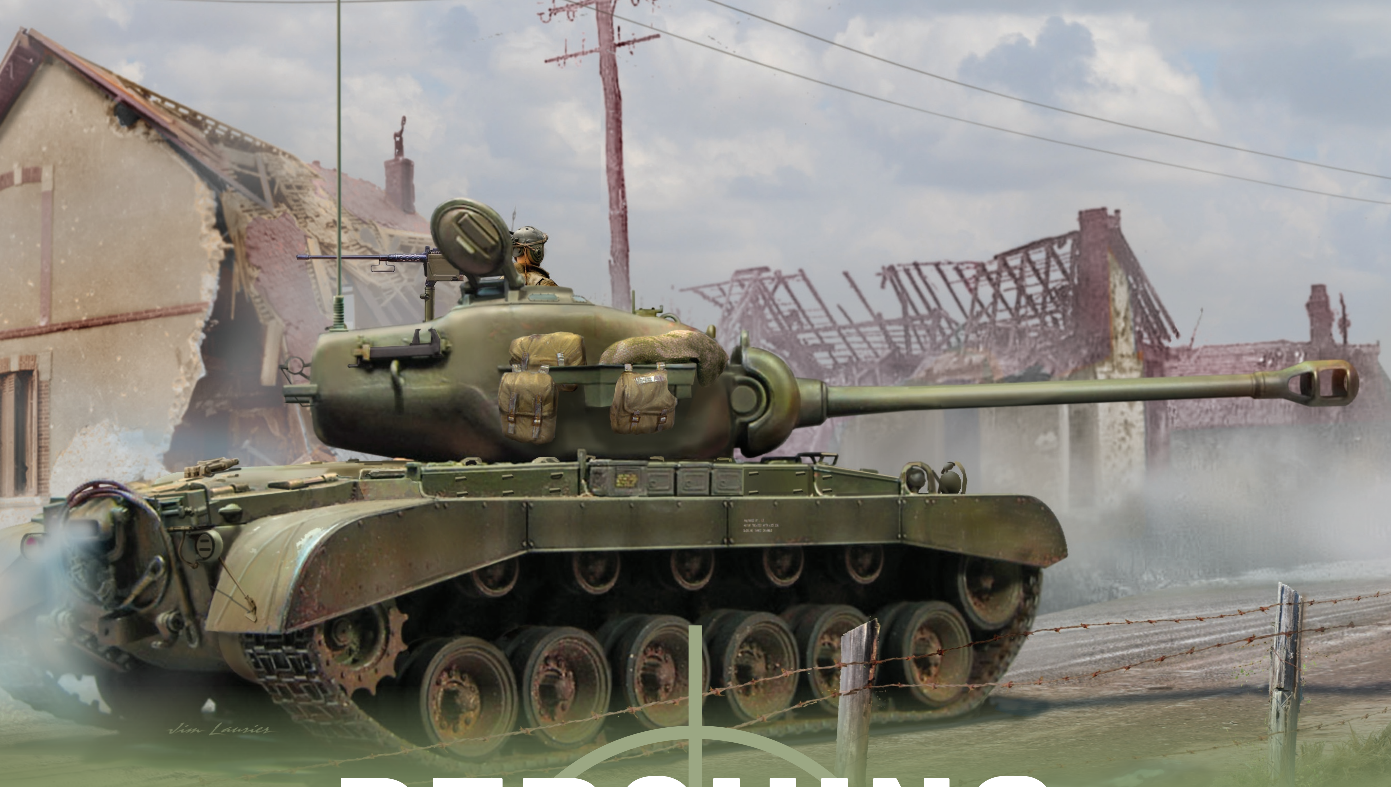
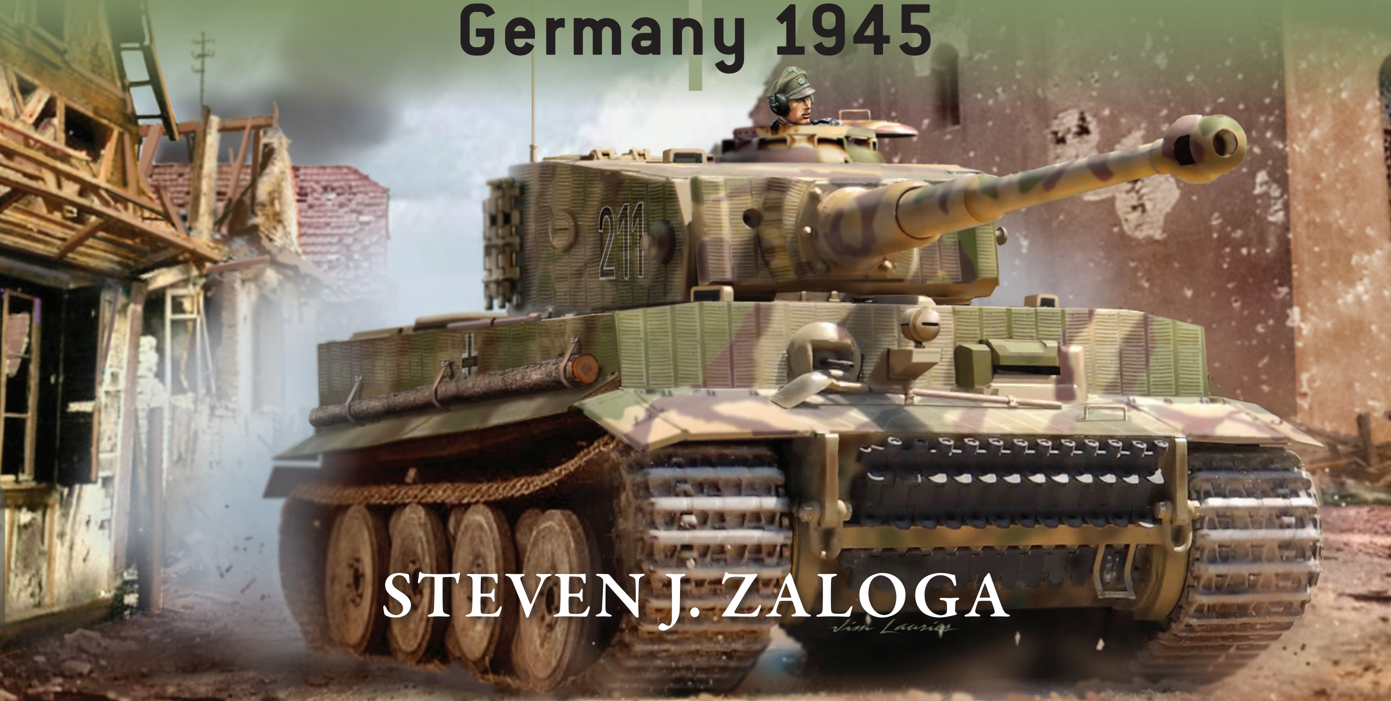


# PERSHING VS TIGER

## Germany 1945



STEVEN J. ZALOGA

# PERSHING VS TIGER

## Germany 1945

STEVEN J. ZALOGA

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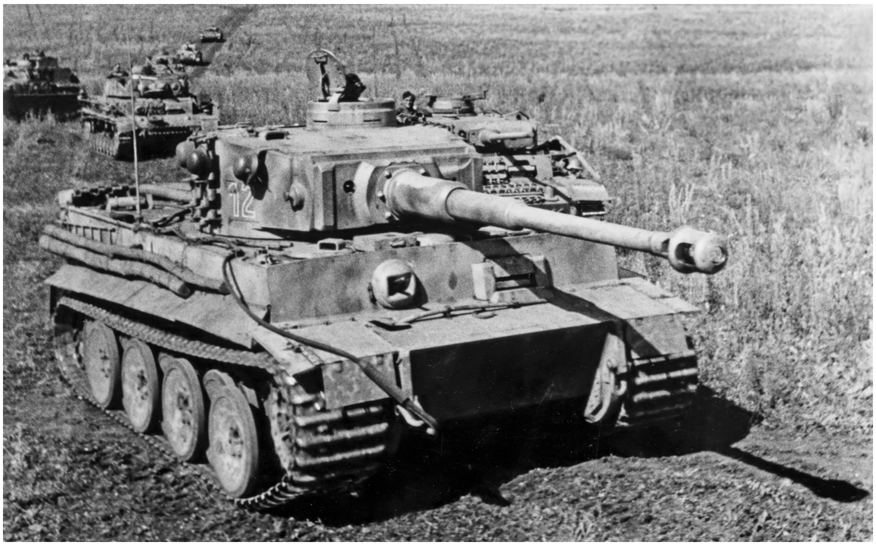
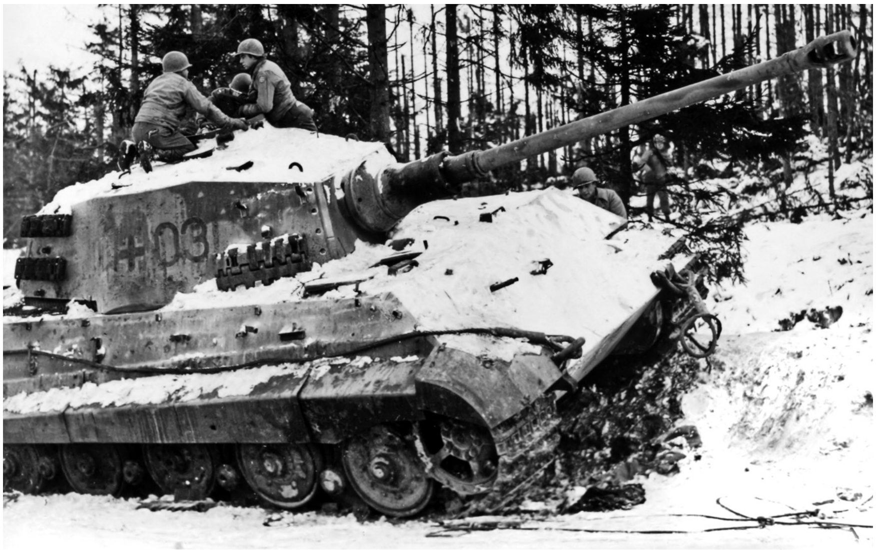
# INTRODUCTION

The Tiger I is the most famous tank of World War II. It earned its legend in the savage tank fighting on the Eastern Front in 1943, notably in the battle of Kursk. The Tiger I became the boogeyman of all Allied tankers: Soviet, British, and American. By the summer of 1944, however, it was no longer invincible once the Allies began deploying more powerful tank guns such as the British 17-pdr, the Soviet 85mm, and the American 90mm.

The rampage in Villers-Bocage on June 13, 1944 by a Tiger I commanded by tank ace SS-Obersturmführer Michael Wittmann stopped a British offensive in its tracks. Yet this was the swan song of the Tiger I in the West. While Allied soldiers continued



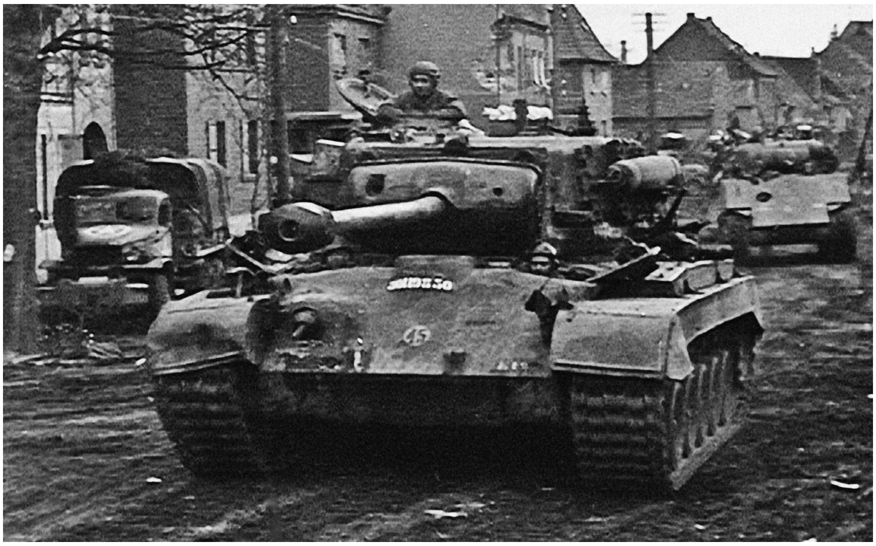
The Tiger I made its reputation in the summer of 1943 as an indestructible tank killer. This is a Tiger I from schwere Panzer-Abteilung 505 during the battle of Kursk.



This Tiger II belonged to sPzAbt 506 and was abandoned on the road between Bastogne and Houffalize in January 1945. It is being inspected by US troops of the 320th Infantry Regiment (35th Division).

to report hundreds of encounters with Tiger tanks in the summer and autumn of 1944, the actual number of Tiger tanks fighting in the West remained small. The name Tiger became synonymous with German tanks, turning the legend into myth.

An earlier book in this series (Hart 2007) examined the conflict between British Sherman tanks and the Tiger I in Normandy in the summer of 1944. This book continues the story by looking at the career of the Tiger I and Tiger II against the US Army in the European Theater of Operations (ETO) from the autumn of 1944 to the end of the war. The only tank in the ETO roughly comparable to the Tiger was the US Army's Pershing, which began to be deployed in small numbers in February 1945. After a brief overview of the combat record of the Tiger along the German frontier in the autumn and winter of 1944, this Duel title focuses on the clash at Elsdorf in February 1945 between the Pershing and Tiger I tank.



A view of T26E3 No. 40 with Sgt Nicholas Mashlonik in the turret, taken on March 2, 1945, while Task Force Welborn was passing through Niederhausen. This tank's registration number shown on the glacis plate was 30119850 and its tactical number was E-12.

# CHRONOLOGY

## 1941

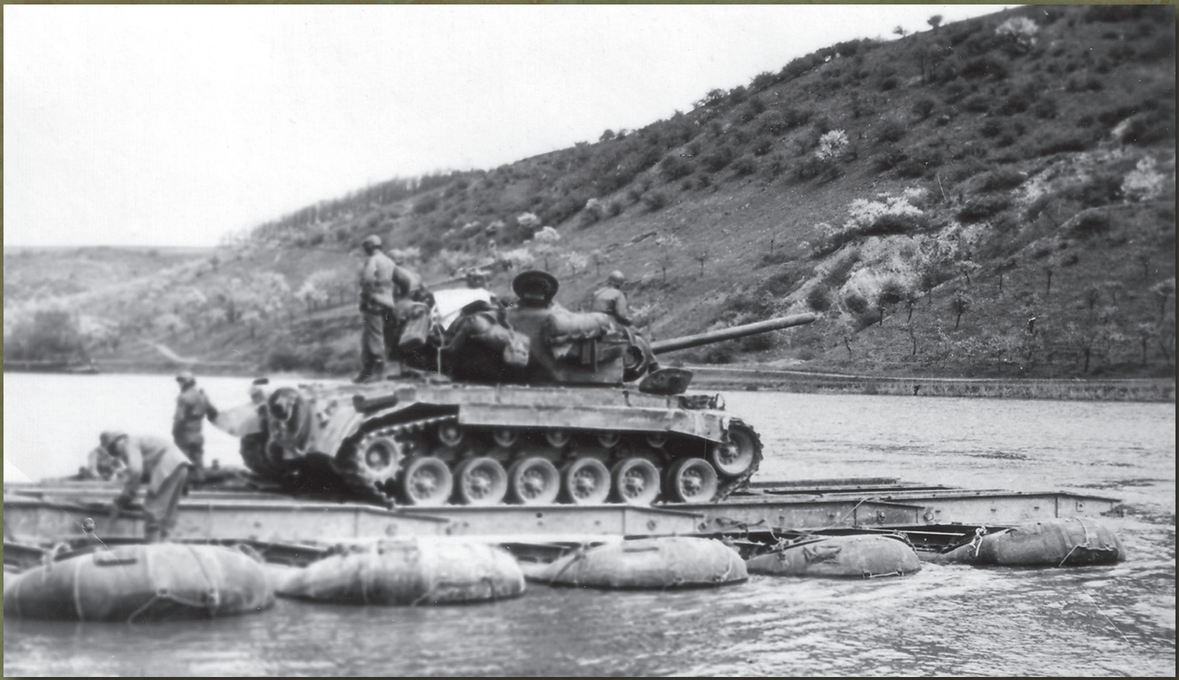
| | |
|---|---|
| **April 8** | Hitler decides to start a new heavy-tank program based around the 8.8cm gun. |
| **May 26** | Henschel and Porsche receive contracts to begin design of the new tank. |

## 1942

| | |
|---|---|
| **April 20** | VK.4501 prototypes are presented to Hitler on his birthday at the Wolf's Lair. |
| **May 25** | The T20 medium-tank project commences. |
| **August 19/20** | First Tiger I tanks issued to schwere Panzer-Abteilung 502. |
| **August 29** | First combat actions by Tiger I on Leningrad Front. |
| **October** | Henschel VK.4503 (H) design, later designated Tiger II, is ordered into series production. |

## 1943

| | |
|---|---|
| **February 14** | First US encounter with Tiger I near Sidi bou Zid in Tunisia. |
| **June 6** | The T25 and T26 tank programs commence. |
| **July 17** | Second US encounter with Tiger I on Sicily. |



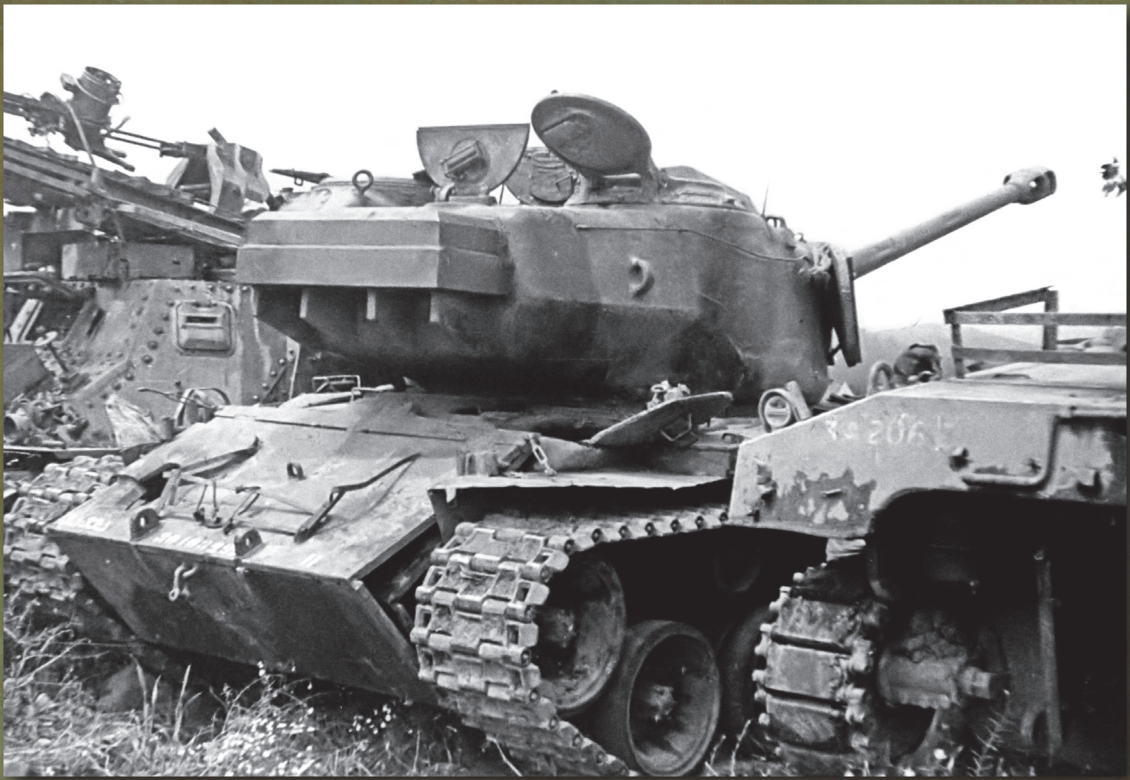
Although not of the best quality, this photo shows T26E3 "Fireball" in early March 1945 being transported over the Rhine on an improvised engineer ferry made from pontoons and a section of treadway bridge. The 90mm gun was replaced with a spare barrel from an M36 90mm GMC tank destroyer, and so lacks the usual muzzle brake.

## 1944

| | |
|---|---|
| **January** | Tiger II deliveries begin. |
| **January** | First T25 pilots delivered to Aberdeen Proving Ground. |
| **February** | First T26E1 pilots delivered to Aberdeen Proving Ground. |
| **May** | Tests of T26E1 conclude at Aberdeen Proving Ground. |
| **June 29** | T25 and T26 redesignated as heavy tanks. |
| **August** | Tiger I production ends. |
| **August 18** | First US encounter with Tiger II tank at Châteaudun, France. |
| **August 28** | First US encounter with Tiger I in ETO near Braine, France. |
| **November** | T26E3 production begins. |
| **December 16** | Two Tiger II battalions are deployed in the Ardennes offensive. |
| **December 22** | US Army chief-of-staff approves dispatch of 20 T26E3 to ETO. |

## 1945

| | |
|---|---|
| **January 20** | T26E3 is declared to be battle-worthy. |
| **February 23** | Start of Operation *Lumberjack*, the First US Army Roer offensive. |
| **February 25** | First ten T26E3 in service with the 3rd Armored Division. |
| **February 26–27** | Fighting for Elsdorf between Pershing and Tiger tanks. |
| **March 29** | T26E3 standardized as the M26 heavy tank. |
| **April 11** | Last known operational Tiger II lost in Osterode. |



This view of the T26E4 Super Pershing shows the large counterweight added to the turret rear to balance the long and heavy 90mm T15E1 gun tube. Also evident is the armor plate added to the front glacis plate.

# DESIGN AND DEVELOPMENT

## TIGER I

The PzKpfw VI heavy tank stemmed from a Heer (German Army) requirement for a heavily armored vehicle to support infantry breakthroughs. The DW 1 (*Durchbruchswagen*: breakthrough vehicle) program began in 1937. Henschel and Porsche delivered prototypes of the concept as the VK.3001. The original conceptions envisioned an infantry-support tank armed with a short 7.5cm or 10.5cm gun and protected by 50mm armor. By 1939, these concepts expanded in scope with initial design work on the much heavier Henschel PzKpfw VII design, also known as the VK.6501, with armor in the 80–100mm range. By 1940, two new heavy-tank programs were under way – Henschel's 36-tonne VK.3601 (H) and Porsche's 45-tonne design. Work on these assorted programs received little priority after the defeat of France in June 1940 because of government instructions to cut back on weapon-development programs that would not be ready for production beyond one year's time.

Encounters with heavily armored enemy tanks in the 1940 campaign such as the French Char B1 bis and British Matilda resuscitated Heer interest in a heavy tank, but the emphasis was shifting from a breakthrough tank to a heavy tank capable of defeating enemy heavy tanks. The issue came to a head during a demonstration of new tanks to Hitler on April 8, 1941. Attending the conference was the famous automobile designer Ferdinand Porsche, long a favorite of Hitler for his work on the Volkswagen. With reports of the threat posed by the heavily armored Matilda tank to the Deutsches

Afrikakorps, Porsche promoted a new heavy-tank project. Hitler, who recalled press accounts of the 8.8cm antiaircraft gun being used in an improvised antitank role during the 1940 campaign, was receptive to the idea. He was especially entranced by Rheinmetall's new 8.8cm FlaK 41, an even more powerful gun than the standard FlaK 18/FlaK 36.

Krupp had been promoting the idea of a tank armed with the 8.8cm L/56 antiaircraft gun, and this gun was selected on April 25, 1941 as the most practical short-term armament option over other schemes such as a 10.5cm gun, or the longer Rheinmetall 8.8cm FlaK 41 gun. Krupp was given a contract to design the gun in June 1941. Such a powerful weapon required a new tank design with a hull wide enough to accommodate a proper turret. At the same time, there was interest in a design more capable of resisting contemporary antitank guns. On May 26, 1941, Henschel and Porsche received contracts to begin design of the new tank, with the aim of having it ready for production in a year's time. In the event, the new heavy-tank program assumed a greater measure of urgency following Operation *Barbarossa*, the invasion of the Soviet Union on June 22, 1941. The Wehrmacht was shocked to discover the Red Army's heavily armored T-34 medium tank and KV heavy tank, and so there was an immediate need to field better tanks. The intention was to create a unit within each Panzer division equipped with 20 of the new heavy tanks to complement the medium tanks. It was appreciated from the outset that the new heavy tanks would be too expensive to completely replace the existing medium-tank force.

The two competing prototypes employed 100mm of frontal armor and 60–80mm of side armor, intended to protect against enemy guns in the 75mm range. Porsche had used the nickname "Leopard" for the previous VK.3001 (P) design, and adopted the name Tiger for the new design. Eventually this name would be applied to the program as a whole, including the Henschel competitor. The Henschel VK.4501 (H) design was the more conventional of the two, using a mechanical transmission and Maybach gasoline engine. Porsche on the other hand was an advocate for a more exotic powertrain, using his Mixte layout which used gasoline engines to power electrical generators which were linked to separate electric motors to propel the tracks on either side.

The Tiger I made its combat debut in late 1942 on the Leningrad Front. This is a Tiger I of 13./PzRgt *Großdeutschland* during the fighting around Kharkov in January 1943.

The first Henschel VK.4501 (H) was assembled using the new Krupp turret and 8.8cm gun in April 1942. The two competitive designs were presented at the Wolf's Lair in Rastenburg on Hitler's birthday on April 20, 1942. Hitler was unable to decide which he preferred, and he ordered the start of production of 100 examples of both types. However, subsequent tests of the Porsche Tiger (P) were a complete catastrophe due to the immaturity of its novel powertrain. Furthermore, its production at the Nibelungenwerke was badly behind schedule. In contrast, the Henschel Tiger (H) encountered no major stumbling blocks and the first serial-production tank was sent for trials by the end of May 1942. Owing to confidence in the Henschel design, a second production contract for 300 more Tiger (H) tanks was awarded in July 1942. A final competitive trial between the two designs was conducted in November 1942. The tests went badly for the Porsche entry and further production beyond the initial batch of 100 was canceled. Instead of being used as a tank, the Porsche Tiger was constructed as an 8.8cm Panzerjäger tank destroyer, subsequently renamed as the Ferdinand in honor of Porsche. Serial production of the Henschel Tiger tanks began in 1942. By the time the design had been completed, its baseline weight had risen from 45 to 57 tonnes.

The initial production tanks were issued to 1. Kompanie of the new sPzAbt 502 (schwere Panzer-Abteilung 502 = Heavy Tank Battalion 502). The first four tanks arrived at the training base on August 19/20, but they had so many teething problems that a team of factory engineers accompanied them in the field. Hitler pressured the Heer to put the Tiger I into immediate service, and the partially formed 1./sPzAbt 502 left Germany for the Leningrad Front on August 24 with only four Tiger I tanks. The new Tiger battalions were hybrid formations with a mixed composition of Tiger I and PzKpfw III tanks. The PzKpfw III medium tanks were intended to be used for missions where it was not worth the trouble employing the heavy and cumbersome Tiger. At the time, the nominal organization was nine Tiger I and ten PzKpfw III tanks per company.

The hasty combat debut of the Tiger I was a mistake. The boggy terrain on the Leningrad Front was hardly ideal for so heavy a tank. Heinz Guderian, Generalinspekteur der Panzertruppen (General Inspector of the Panzer Force), later blamed Hitler's impatience for the initial problems:

> He was itching to try to try out the big tank. He therefore ordered that the Tigers be committed in a quite secondary operation, in a limited attack carried out in terrain that was utterly unsuitable, for in the swampy forest near Leningrad heavy tanks could only move in single file along the forest tracks, which, of course, was exactly where the enemy antitank guns were posted, waiting for them. The results were not only heavy, unnecessary casualties, but also the loss of secrecy and of the element of surprise for future operations.

During the Tiger I's first combat action on August 29, three of the four tanks broke down due to transmission failures. It took three weeks to get the unit ready for combat again. During an attack near Tortolovo on September 22, a PzKpfw III was knocked out, a Tiger I was hit and the engine failed; the crew abandoned the tank and set it on fire with a grenade to prevent its capture. The other three Tiger I tanks became bogged down in the marshy soil but were recovered. By the end of September 1942, the

The US Army first encountered Tiger I tanks serving with sPzAbt 504 in Tunisia in 1943. This captured example was sent back to the United States where it is depicted at a display in Washington, DC in February 1944 with the American crew dressed in Deutsches Afrikakorps uniforms.

company had eight Tiger I and 25 PzKpfw III tanks on hand, plus the damaged Tiger I still in the bog. The battalion commander, Major Richard Märker, was ordered to report to Führer Headquarters to explain the loss of the tank. He was made a scapegoat for the failure of the first Tiger mission and was relieved of command on November 21. A few days later, the damaged Tiger I was packed with explosives and blown up to prevent its capture. The detachment received further reinforcements late in the year. Renewed combat in January 1943 led to the first loss of a Tiger I to the Red Army. During fighting on January 18, five Tiger I tanks were lost including one that became stuck in a peat bog, two destroyed by their own crews, and two more lost to Soviet antitank guns. The Red Army later recovered the bogged Tiger I and sent it to the Kubinka proving ground near Moscow for testing, soon followed by a second example.

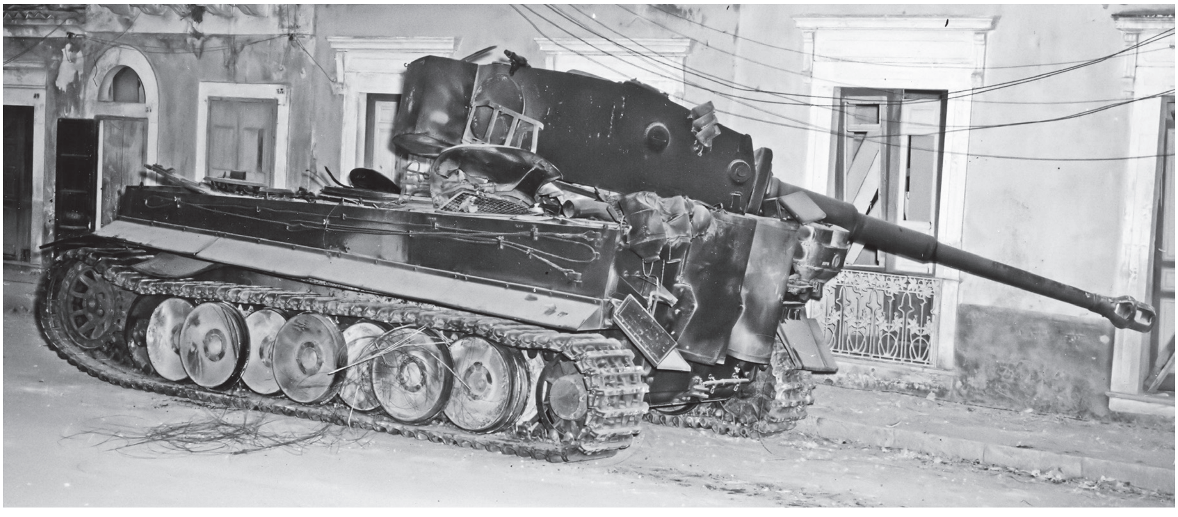
Tiger strength was gradually built up in anticipation of Operation *Citadel*, the offensive to cut off the Kursk salient in July 1943. The bulk of these were in two Heer battalions, sPzAbt 503 in the south and sPzAbt 505 in the north, each with a nominal strength of 45 Tiger I tanks. Panzergrenadier-Division *Großdeutschland* had a reinforced Tiger I company, and the three *SS-Panzer-Divisionen* each had a Tiger I company, each with a nominal strength of 14 tanks. A total of 133 Tiger I tanks were available at the start of *Citadel*, but only 97 were ready on the first day, due to lingering mechanical problems and difficulties moving such a heavy tank to the front without adequate tactical bridging. Tiger strength quickly fell due to combat attrition. Although very few Tiger I tanks were written off as total losses, many were disabled in the first days of fighting on encountering minefields. In the case of one of the Tiger battalions, an entire company was disabled by mines in one day.

The Tiger I's thick armor offered it excellent protection except against the heaviest of Soviet antitank weapons. Most Tiger tanks withstood multiple hits against their frontal armor; the few penetrations that did occur were usually of the more vulnerable side and rear armor. At this stage of the war, Soviet T-34 and KV-1 tanks were armed with the 76mm gun which could not penetrate the Tiger frontally at normal combat ranges. The Tiger I was essentially invulnerable to most Soviet tank and antitank guns in frontal engagements. The only effective Tiger killers were the relatively rare 57mm antitank guns, or overmatching weapons such as heavy field guns or 85mm antiaircraft guns used in a direct-fire mode. For example, a number of Tiger I tanks were knocked out when their commander cupolas were completely blown off by a direct field-gun hit. The Tiger I's 8.8cm gun proved to be a formidable weapon against the Soviet tanks. The two Heer Tiger battalions claimed 182 Soviet tanks up to July 16, when the offensive was called off.

While the Tiger was a formidable tank killer at Kursk, its actual combat effectiveness was far less than might be suggested by its legend. Soviet accounts of the battle of Kursk are filled with reports of battles with Tigers when undoubtedly most of the skirmishes involved more mundane types such as the PzKpfw IV. The enormous scale of Soviet tank losses seemed slightly less embarrassing if they could be credited to this invulnerable new monster. As was the case later in Normandy in 1944, "Tiger" simply became the Red Army soldier's nickname for virtually any German tank. Likewise, every lowly StuG III assault gun was described as a "Ferdinand" in Soviet accounts even though the actual Ferdinand was a rarity.

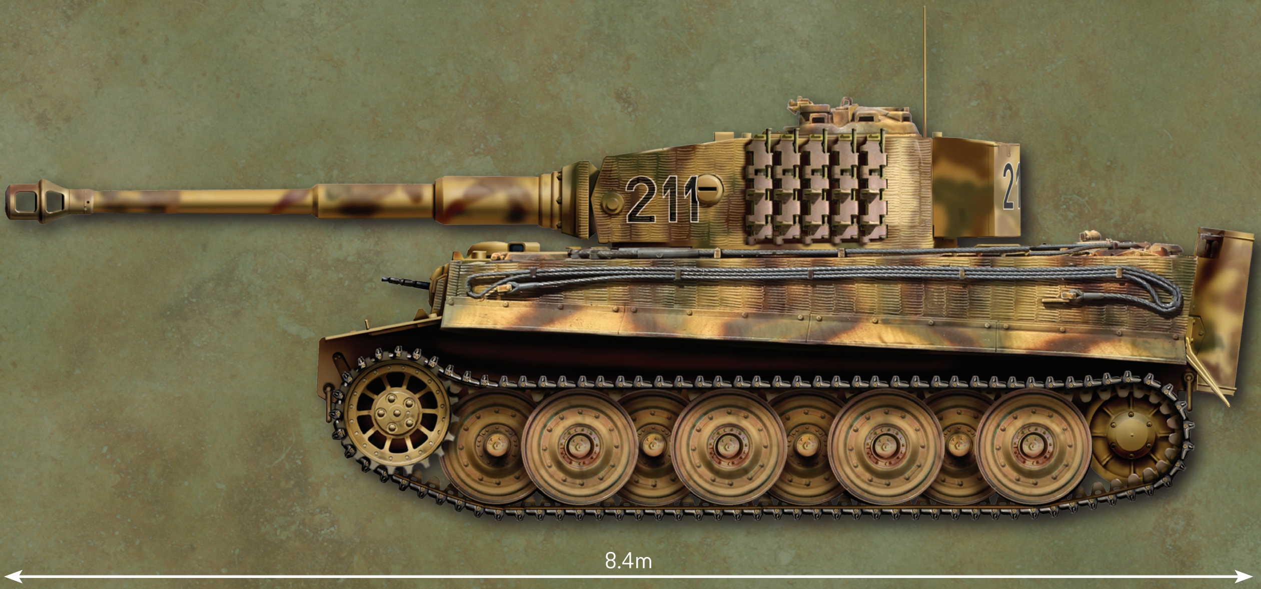
In spite of the Tiger's overwhelming advantage when facing Soviet tanks, its actual tactical impact was far more modest. The Tiger's one moment of glory during the Kursk fighting was on July 5, 1943 when sPzAbt 505 was able to penetrate the initial defensive belt of the Soviet 15th Rifle Division near Butyrki in the Heeresgruppe Mitte sector. However, the rapidity of this breakthrough was unanticipated and follow-on Panzer divisions were not ready to exploit the success. In the Heeresgruppe Süd sector, sPzAbt 503 proved far less effective. Against doctrine, it was split up into its three constituent companies and used piecemeal with little tactical effect. Within the first three days of fighting, the combat effectiveness of the Tiger units had been diluted by poor tactical employment, the ubiquitous Soviet minefields, and mechanical breakdowns. On average, only about 38 percent of the Tiger force was operational on any given day, though the readiness rate varied considerably from day to day. Overall, the Heer and Waffen-SS Tiger units reported total losses of only 13 Tiger tanks by July 16, 1943, but they had suffered temporary losses of 87 tanks and had only 52 ready for action. The technical superiority of the Tiger I was almost meaningless in view of the small number of tanks available from day to day, especially when so thinly spread across such a large front. Tiger I availability reached its nadir in the wake of the Kursk fighting, with only 18 percent of the available tanks actually operational, gradually increasing to 31 percent by the end of 1943. The Tiger I was most extensively used on the Eastern Front. Of the 1,238 Tiger I tanks lost in combat, 859 (69 percent) were lost on the Eastern Front and only 187 in the West, mostly in Normandy.

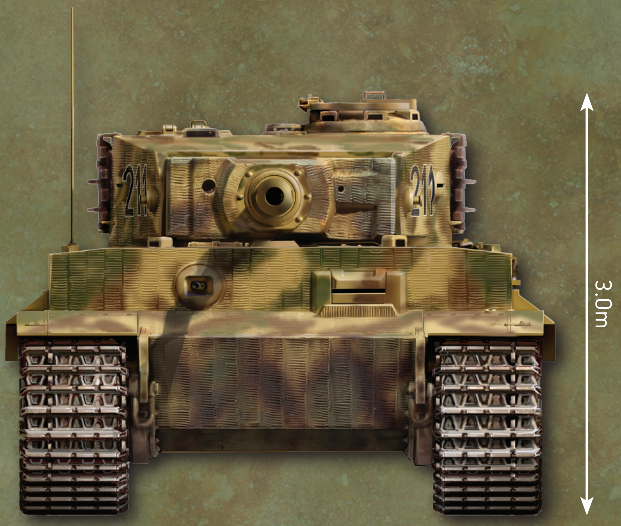
Prior to D-Day, the US Army tended to dismiss the Tiger threat due to its inconsequential tactical employment in Tunisia and Sicily in 1943. In the first three days of fighting on Sicily, 2./sPzAbt 504 lost 11 of its 17 Tiger I tanks due to ineffective tactics. This charred Tiger I, one of two that had been abandoned and blown up by their crews in Biscari on July 12, 1943 during the retreat from the beachhead counterattacks, was photographed by a US Navy gunfire survey team.

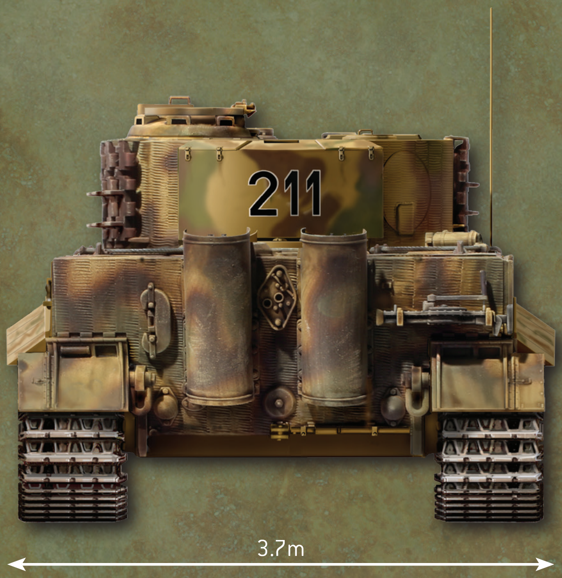


# TIGER I

Crew: 5
Length: 8.4m
Width: 3.7m
Height: 3.0m
Weight (combat loaded): 56.9 tonnes
Main gun: 8.8cm KwK 36
Main-gun ammunition: 92 rounds
Secondary armament: Two 7.92mm (hull, coaxial)
Engine: Maybach HL 210P45, V-12 gasoline engine
Transmission: Maybach OLVAR OG 401216A with eight forward, four reverse gears
Fuel capacity: 570 liters
Road speed: 38km/h
Road range: 140km







# TIGER II

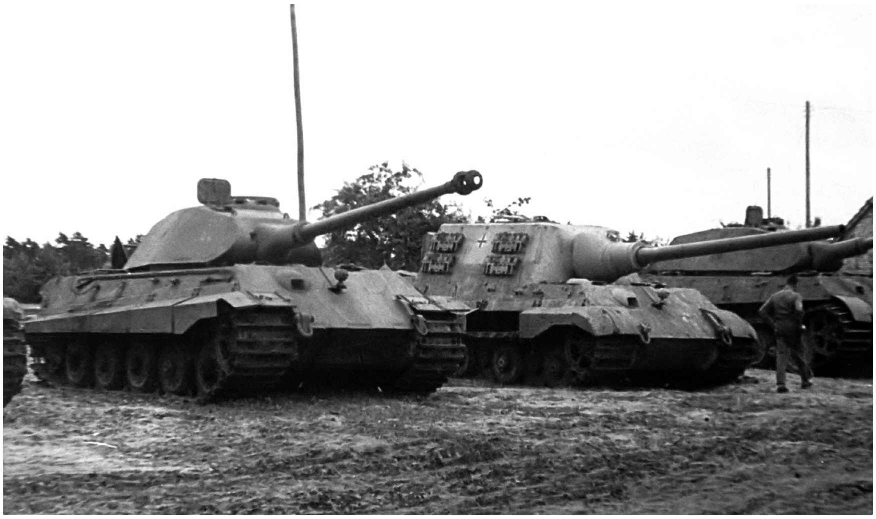
Development of a new heavy-tank design beyond the Tiger (H) was largely at the instigation of Hitler rather than any particular Heer requirement. Hitler was prone to technological escapism, frequently becoming obsessed with super-weapons as a panacea for the mundane difficulties of the modern battlefield. One of these was his quest to deploy the powerful new Rheinmetall 8.8cm FlaK 41 gun in a ground role. Even though the existing 8.8cm Krupp L/56 gun was more than adequate to destroy any enemy tank, he insisted on the adoption of the more powerful new gun. In the event, it was Krupp that was assigned the task of developing a tank version of the FlaK 41 which eventually emerged as the 8.8cm KwK 43. This program began in May 1941 alongside that of the Krupp L/56 gun that armed the Tiger I tank. Although Porsche held a lead in the initial development of the new VK.4502 (P) fitted with the new gun, this program gradually faded due to the poor performance of Porsche's original Tiger design. Henschel was also commissioned to work on a competitor to the Porsche design and began to develop the new tank in earnest in November 1942 after Tiger I design was completed. The VK.4503 (H) was strongly influenced by design efforts on the new Panther II tank, with the idea being to standardize as far as possible between the new medium and heavy tanks.

Besides designing the new 8.8cm L/71 gun, Krupp was also responsible for the turret development. The first design was sometimes called the Tiger P2 turret since it was intended for the stillborn Porsche design. This featured a rounded front which came in for some criticism since it offered a shot-trap on its lower chin and also presented manufacturing difficulties due to the need for a curved front plate. A second Krupp design, sometimes called the H3 due to its relation to the Henschel tank, used a simpler flat front plate and this became the standard production type.

In October 1942, the Henschel VK.4503 (H) design was ordered into series production and in November 1942 the Porsche competitor was officially canceled. In March 1943, the new Henschel tank began to be called the Tiger II, and so the earlier type was retroactively called Tiger I. The propaganda name *Königstiger* (King Tiger, Royal Tiger) began to be used in January 1945, though this was never an official Wehrmacht designation.

The intention had been to start Tiger II serial production in September 1943 in order to have it available for offensive operations in the spring of 1944. This proved to be wildly overoptimistic due to the many engineering and manufacturing challenges, and the first prototype was completed only in November 1943. The Tiger II program was also delayed by Allied air raids in September–October 1943 that damaged Henschel's Kassel-Mittelfeld plant where the assembly work was conducted. Tiger I production reached its peak in April 1944, at which point it gradually fell as Tiger II production began. The first serial-production Tiger II tanks were accepted by the Heer in January 1944, though there was no significant production until the late spring of 1944. The Tiger II made its combat debut in August 1944.

Tiger I production ended in August 1944, which curiously enough, coincided with peak Tiger II monthly delivery of 97 tanks; but Henschel production failed to reach the intended goals due to the general collapse of German industry in the face of Allied



The initial production version of the Tiger II used the P2 turret originally developed by Krupp for the canceled Porsche design. This is a scene at Henschel's proving ground at Haustenbeck in March 1945 after the capture of the area by the US 3rd Armored Division. A prototype of the tank-destroyer version of the Tiger II, the Jagdtiger, is shown here sandwiched between two Tiger II tanks fitted with the early P2 turret.

bombing raids. The bombing campaign cut supplies from key subcontractors, and Allied raids on the Kassel-Mittelfeld plant disrupted final assembly. Although Henschel had contracts to deliver 940 Tiger II tanks in September 1944–March 1945, only 234 were actually delivered.

## M26 PERSHING

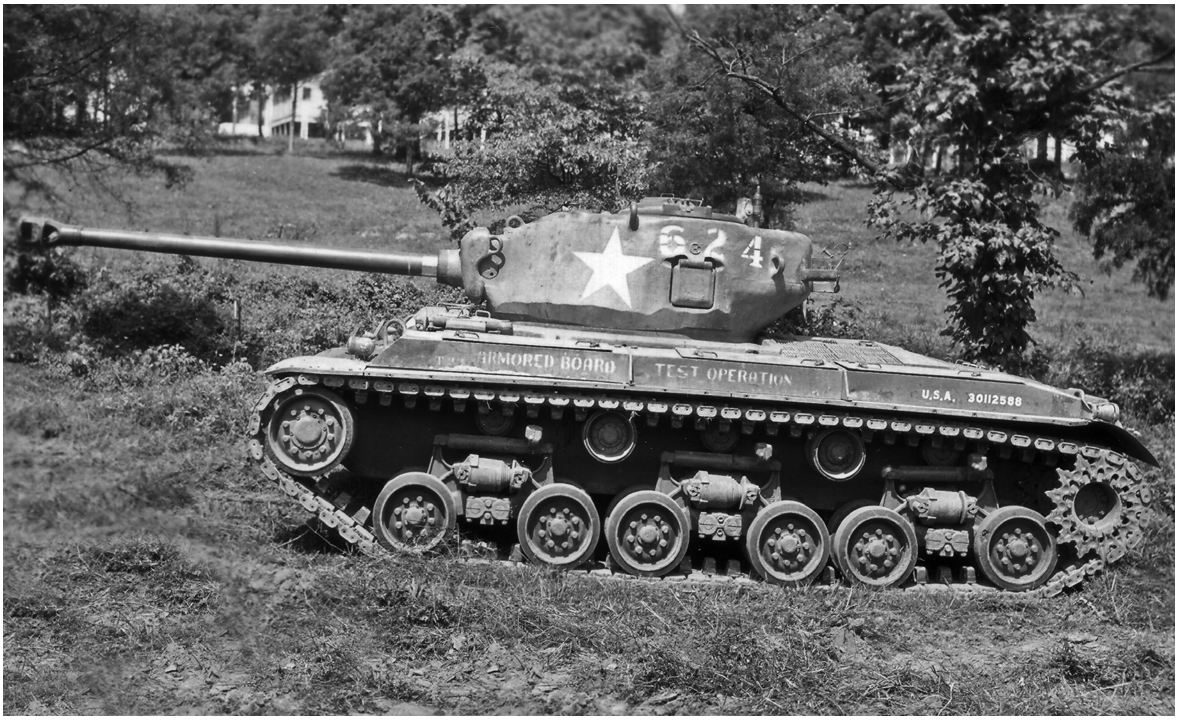
Development of the M26 Pershing tank can be traced back to the T20 medium-tank project that started in May 1942 to "develop a medium tank with increased firepower, armor protection, and maneuverability" compared to the M4 medium tank. The T20 program proved to be an enduring controversy between the US Army's developing agency, the Ordnance Department, and the headquarters of the Army Ground Forces (AGF) headed by Lt Gen Lesley McNair. The AGF policy on tank acquisition was dominated by two criteria: battle-need and battle-worthiness. Battle-need was the policy that tank programs would be initiated only if requested by combat arms to avoid the "mad scientist" disease of chasing every attractive, if unnecessary, technological dream. The T20 program violated this policy since it was initiated by Ordnance with little or no input from the combat arms. The head of the Ordnance research effort, Maj Gen Gladeon Barnes, did not agree with AGF policy since he felt that the combat arms were not well informed on technical matters and that Ordnance should have greater leeway in promoting new developments. The battle-worthiness doctrine meant that tanks had to be durable enough to perform on foreign battlefields. New designs were subjected to extensive testing, with developmental tests by Ordnance at Aberdeen Proving Ground, Maryland and operational tests by the Armored Board at Fort Knox, Kentucky.

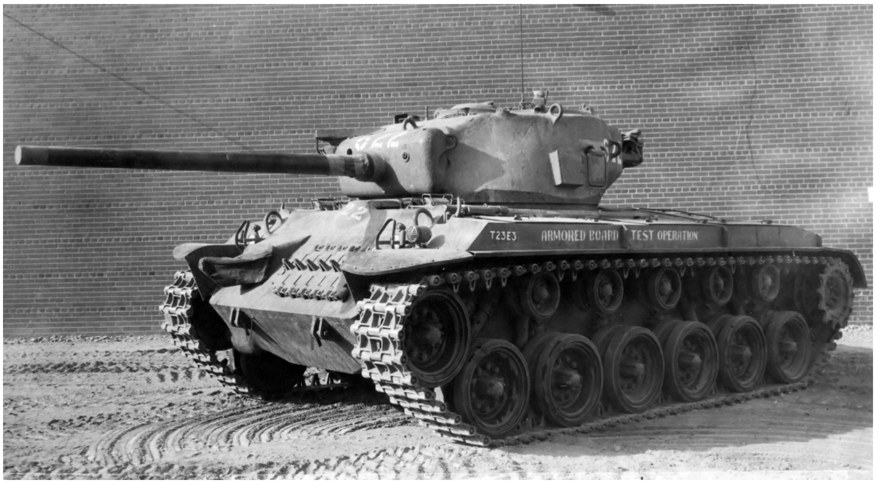
Since there was no specific user requirement, the T20 program became an extensive series of engineering experiments to examine a wide range of powertrain and armament options. The one feature in common was a new hull design to get away from the M4 medium tank's excessive height. By confining the engine and transmission in the rear, the design avoided the use of a drivetrain under the turret which inevitably resulted in a higher hull. The T20 program also ended the reliance on the relatively small pool of US Army engineers at Rock Island Arsenal in Illinois and Aberdeen Proving Ground, in favor of exploiting the talents of a much larger pool of engineers in the US automotive industry. Fisher Body, part of General Motors Corporation in the Detroit area, was largely responsible for the design, though the manufacture of many components was farmed out to industrial subcontractors.

There were three developmental sub-series of the T20. The baseline T20 examined several armament options including an automatic 75mm gun, 3in gun, and 76mm gun. The T20 variants were powered by a new Ford V-8 engine and used a Hydramatic transmission and torque converter. The T22 series used mechanical transmissions similar to those of the existing M4 medium tank. The T23 series, like Porsche's Tiger project, used a General Electric hybrid electric drive with the gasoline engine providing power to a system of generators and electric-drive motors. These various sub-series also examined several new suspension designs. Ordnance hoped to push the T20 series into production to replace the M4 medium tank in 1944. In July 1943, they recommended that the T23E3 with electric drive be standardized as the M27 medium tank and the T20E3 with torquematic drive as the M27B1. The Armored Board at Fort Knox strongly opposed this scheme as they were very skeptical of the electric-drive concept and the impact it would have on maintaining tanks in the field. Nevertheless, Ordnance was allowed to produce 50 T23E3 for further development.

A fourth sub-series was initiated to accommodate a 90mm gun. This was first mounted on the T23E3 in May 1943, but the Armored Command was unwilling to

Three of the T23 pilots were tested with horizontal volute spring suspension as used later on the M4A3E8. This configuration was also used with the early T25 tank pilots.





The T23E3 substituted torsion-bar suspension for the earlier volute suspension. This feature would eventually be incorporated into the T26 series.

support the effort, feeling that the new 76mm gun was more than adequate to handle the existing German threat. It should be noted that the US Army had encountered the Tiger I for the first time in Tunisia in February 1943, and again on Sicily in July 1943. In both cases, the Tigers were present in very small numbers and had so little tactical impact that there was no urgency to field an antidote.

Ordnance made the argument that the US Army would have to stay ahead of any future German developments, so in April 1943, the Army Service Forces (ASF), which managed the US Army's industrial effort, approved a program to build 250 T23E3 (76mm) for test purposes. (It was subsequently agreed to build 50 of these with the 90mm gun.) These were designated as T25 when built with 3in (76mm) of frontal armor and T26 when built with 4in (105mm) of frontal armor. The requirement for the T26 specifically stated that its armor was to be "equivalent or superior to the German Mark VI (Tiger) tank." The engineers complained about the growing weight of these tanks, and as a result, torquematic drive was substituted for electric drive, saving a few tons of weight. These tanks were designated as T25E1 and T26E1, and because of their 40–45-ton weight, were reclassified as heavy tanks in June 1944.

After the second encounter with Tiger tanks on Sicily, in September 1943, Ordnance recommended that 500 T25 and 500 T26 tanks be built to permit delivery in 1944. This met bureaucratic resistance from most US Army agencies. The Armored Force did not want a new tank since they felt that the M4 medium tank was adequate for the job. If a 90mm gun was needed, they wanted it mounted on the M4, not on an unproven new tank. Since the Armored Force refused to validate the "battle-need" for the new tank, both McNair's AGF headquarters and the ASF refused to support the Ordnance request. The official Ordnance history written after the war claimed that the Pershing might have been available in the summer of 1944 if there hadn't been so much resistance. This claim has been widely contested ever since. It should be noted that part of the AGF's skepticism about the T25/T26 was Barnes' advocacy of several dubious schemes such as putting the T23 medium tank and M6 heavy tank into service.

Barnes was adamant on the need for the T25/T26, and since the Armored Board at Fort Knox would not back his initiative, he looked overseas for support. In the autumn of 1943, the European Theater of Operations US Army (ETOUSA) headquarters was led by Lt Gen Jacob Devers as a place-holder until Gen Dwight D. Eisenhower's arrival. Devers was the former commander of the Armored Forces, and a known proponent of a more powerful tank. In anticipation of facing more modern tanks on the battlefield in 1944, on November 13, 1943 Devers requested that development of the T26E1 be accelerated and that 250 of these be manufactured as quickly as possible so that it would be possible to deploy them on the scale of one per five M4 medium tanks. On the other hand, tank commanders in the North African Theater of Operations – US Army (NATOUSA) showed little enthusiasm for the new tank. Devers' request created the "battle-need" for the new tanks.

Hoping to put an end to this debate, McNair wrote a letter on November 30, 1943 to the Army's chief-of-staff. Gen George C. Marshall was the ultimate authority when the US Army's subordinate commands could not agree. McNair explained his resistance to T26 production:

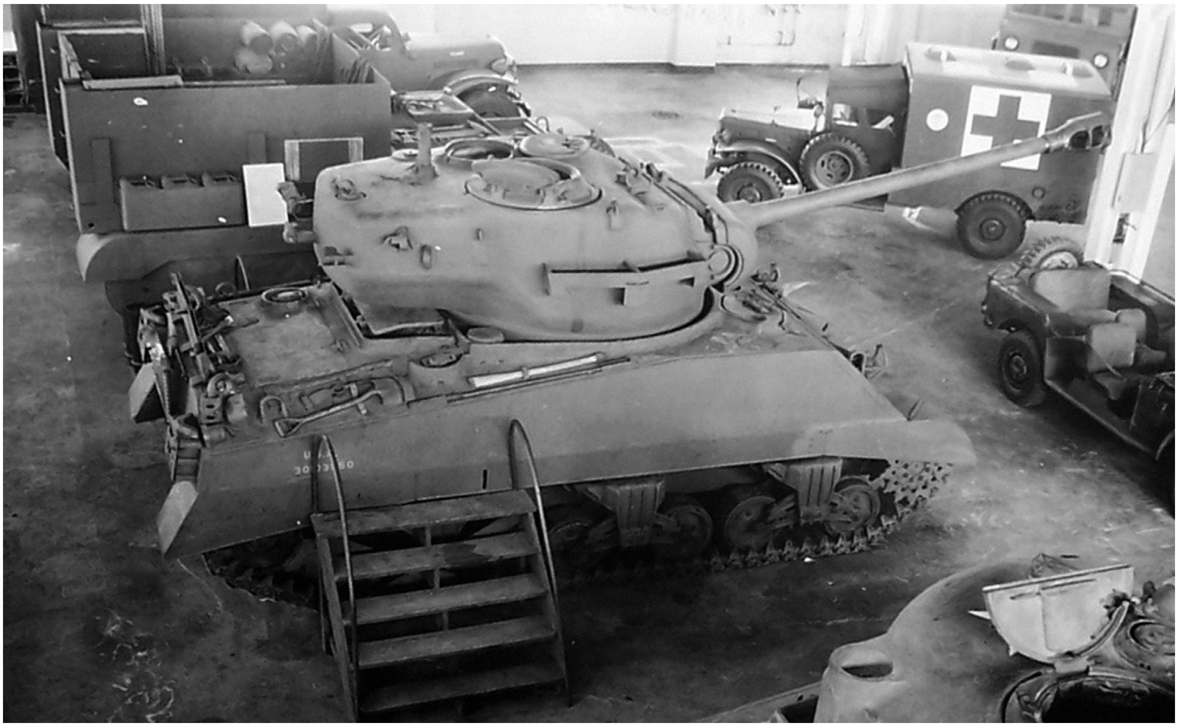
> There can be no basis for the T26 tank other than the conception of a tank versus tank duel – which is believed unsound and unnecessary. Both British and American battle experience has demonstrated that the anti-tank gun in suitable numbers and disposed properly is the master of the tank. Any attempt to armor and gun tanks so to outmatch anti-tank guns is foredoomed to failure … There is no indication that the 76mm antitank gun is inadequate against the German Mark VI tank … Tank destroyers of either 76mm or 90mm caliber thus can support an armored division or other unit in whatever degree is necessary to protect against hostile tanks … Certainly the T26 tank, weighing upwards of 43 tons, is not well adapted to the primary mission of tanks.

On January 21, 1944, Marshall received a recommendation from the Joint Chiefs of Staff, arguing against the T26, but recommending that the decision be deferred until Eisenhower took over ETOUSA command. Marshall recognized that he was not technically qualified to judge the matter and so handed it over to Lt Gen Thomas T. Handy, the head of G-4 (Operations) of the General Staff:

> My view is that we should go ahead with this project unless Eisenhower reports unfavorably … Devers is anxious to have these tanks … The Germans are making and using heavy tanks. It is another case of having to go ahead without waiting for long field tests. We may make a mistake and be blamed for it. That is far better than not having a weapon that is needed.

As a result of Handy's recommendation, Marshall agreed to let the T26 go into production, and Eisenhower concurred in mid-January 1944, temporarily ending the debate.

The desirability for a new tank continued to aggravate the senior leadership in Washington, DC, and in early 1944, the Armored Center at Fort Knox was instructed to put together a team of their best tank experts to recommend the most promising solution for the upcoming 1944 battlefield. Headed by the commander of the Armored Center, Maj Gen Charles L. Scott, the April 17, 1944 report noted that "Except for a short time after the appearance in battle of our M4, German tanks have consistently excelled our tanks in quality and design of suspension



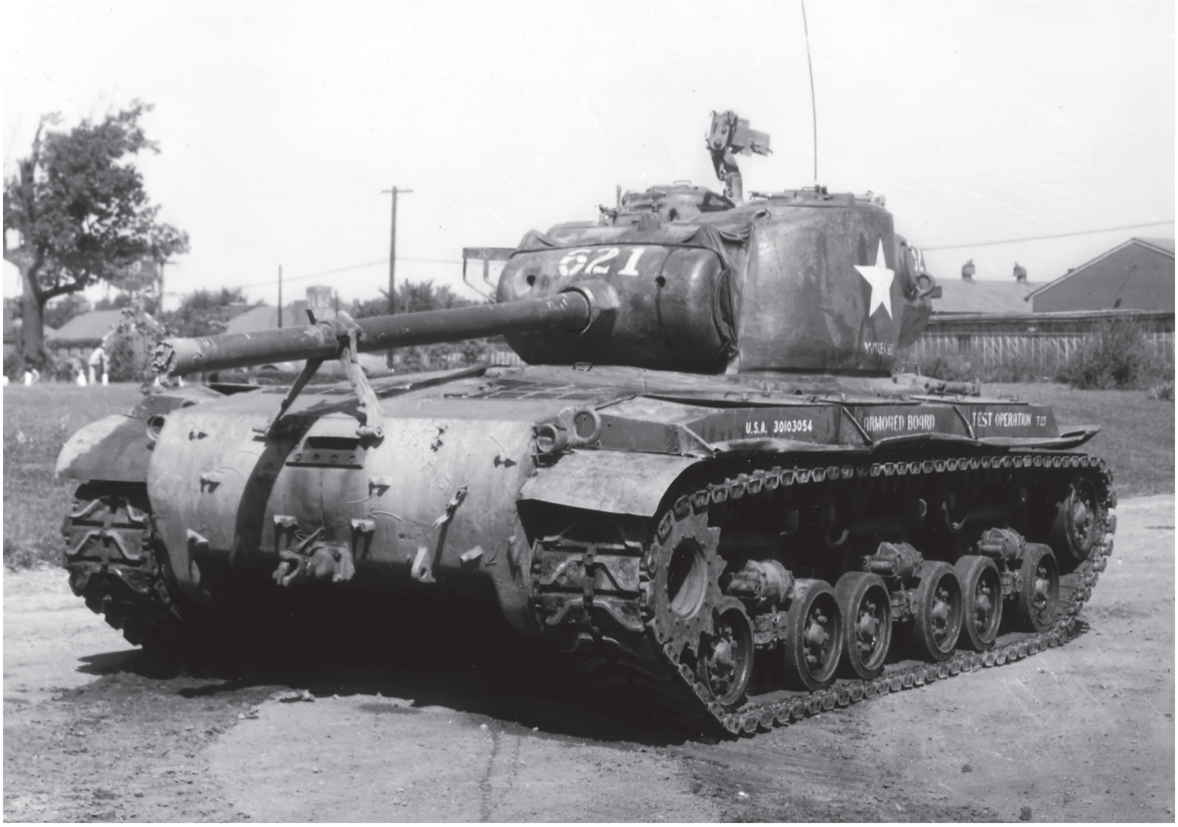
The Armored Force preferred a version of the M4 medium tank armed with the 90mm gun. Although a single M4 with a T26 turret was demonstrated in the summer of 1944, Ordnance argued that it could not be produced any sooner than the more effective T26E3.

systems, performance of guns, caliber for caliber, and in fire control equipment." The report proceeded to question McNair's conception of AGF tank doctrine by noting that

> While it is conceded that the primary objective of our armor is to engage enemy infantry, artillery, and rear installations, experience has shown that the enemy will always counter an armored penetration with his own armor. Therefore, in order to operate successfully against remunerative and desirable enemy installations, we shall first have to defeat enemy armor. To do this, we must have a fighter tank that is superior to the fighter tank of the enemy.

The Scott report was skeptical of the Ordnance promise to field the T25 or T26 in the near term, estimating that they would not be available in sufficient quantity until July 1945. Instead, the report recommended mounting the 90mm T25/T26 turret on the existing M4A3 medium tank. The recommendations of the Scott report were largely ignored. An example of the M4 with 90mm gun was displayed in July 1944 but was quickly dismantled since Barnes argued it could not be manufactured any sooner than the T25/T26.

The first two pilots of the T25 series were completed by converting T23 tanks, and were delivered to Aberdeen Proving Ground in January 1944 and Fort Knox in April 1944. A single electric-drive T26 was delivered to Fort Knox in late October 1944 where it was quickly dismissed due to the Armored Board's long-standing disdain for the entire electric-drive concept. Forty T25E1 and 10 T26E1 tanks with torquematic transmissions were delivered for trials in February–May 1944.



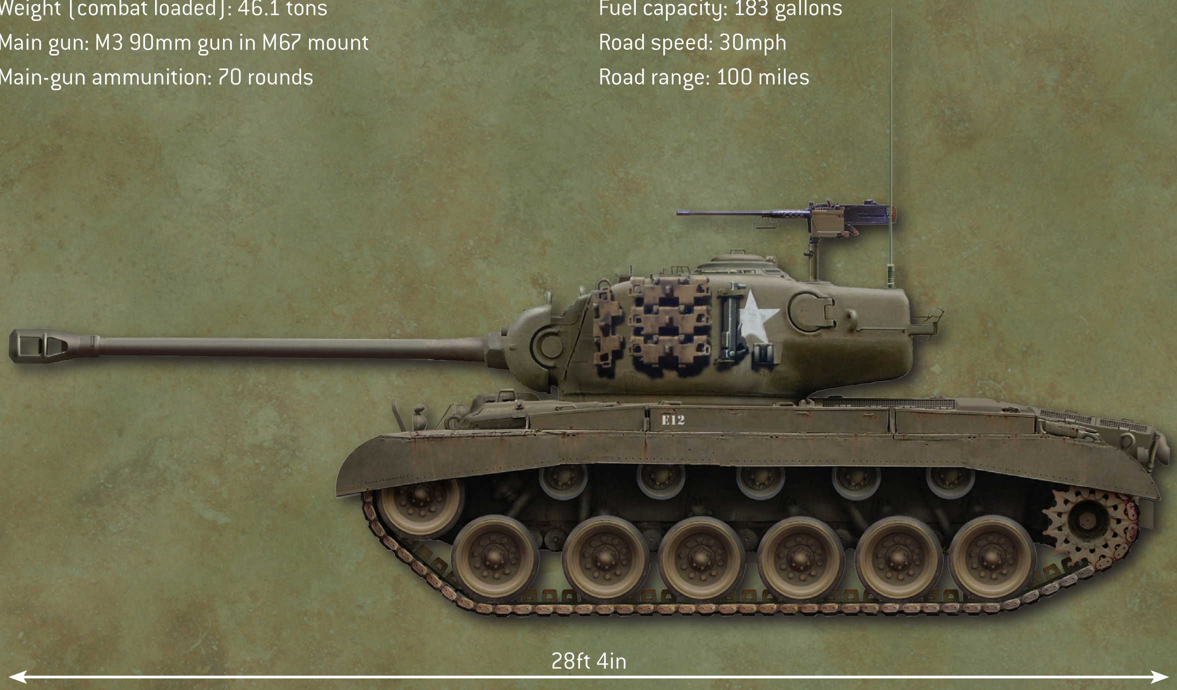
The T25 was derived from the T23 tank and Pilot No. 2, shown here, was fitted with horizontal volute spring suspension.

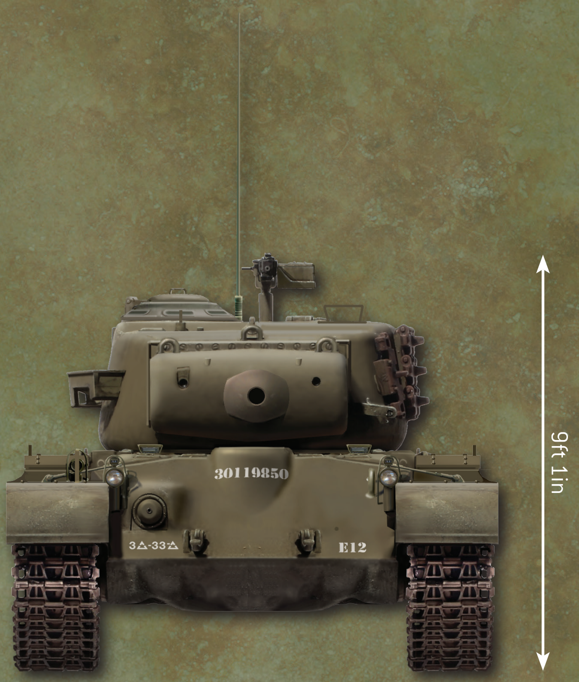
In March 1944, Maj Gen Barnes proposed sending five T23, five T25, and one T26 tank to NATOUSA for a battle evaluation in Italy. Barnes chose NATOUSA over ETOUSA since it was headed by Lt Gen Jacob Devers, who had been transferred from ETOUSA on Eisenhower's arrival and put in charge of the Mediterranean theater in anticipation of the Operation *Dragoon* landings in southern France. McNair's AGF denied the request, arguing that the types in question had not been tested by the Armored Board and so were not considered "battle-worthy," and they did not favor the idea of making a combat zone into a testing agency. Ordnance requested the formation of a test platoon for the new T26 tank in Italy again in August 1944, and while it was accepted by the General Staff, AGF again denied the request.

Tests of the T26E1 at Aberdeen Proving Ground concluded in late May 1944 and were deemed satisfactory. The turret basket and ammunition stowage were roundly criticized, leading to a redesign that largely removed most of the basket and increased 90mm ammunition stowage to 70 rounds. By the summer of 1944, reports of widespread encounters with the well-armed Panther tank in Normandy largely killed any interest in the T25 effort, and focused effort on the more heavily armored T26E1. With the various improvements prompted by the Aberdeen Proving Ground trials, the reconfigured tanks were designated as T26E3. Further trials at Aberdeen Proving Ground indicated that the problems uncovered in the earlier tests had been rectified, so production of the T26E3 was authorized to begin at the Fisher Tank Arsenal in

# T26E3 PERSHING

Crew: 5
Length: 28ft 4in
Width: 11ft 6in
Height: 9ft 1in
Weight (combat loaded): 46.1 tons
Main gun: M3 90mm gun in M67 mount
Main-gun ammunition: 70 rounds
Secondary armament: Two .30-caliber (hull, coaxial), one .50-caliber heavy machine gun
Engine: Ford GAF 8-cylinder gasoline engine
Transmission: Torquematic with three forward, one reverse gear
Fuel capacity: 183 gallons
Road speed: 30mph
Road range: 100 miles


E12
28ft 4in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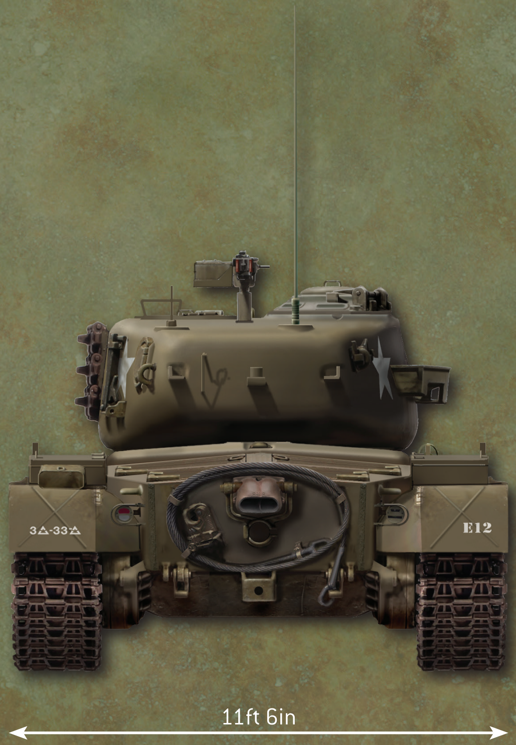
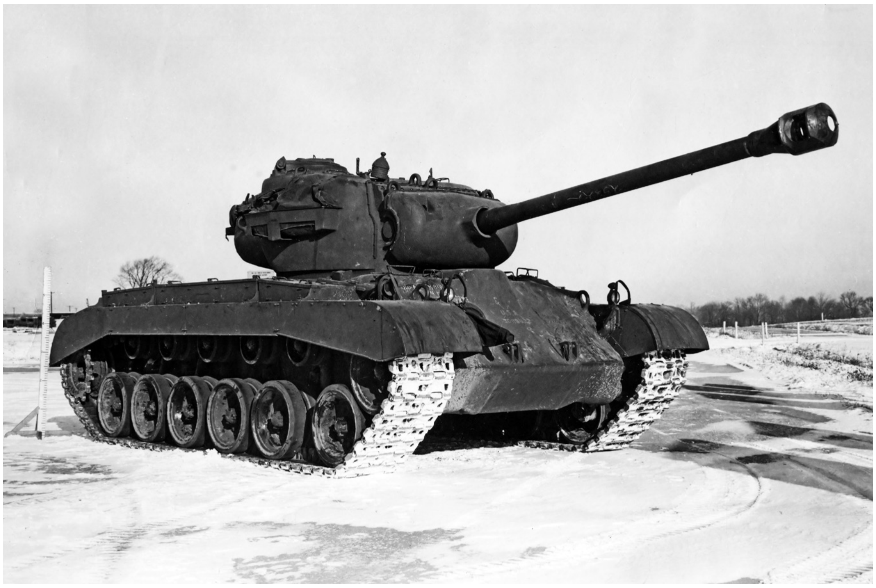
3△-33△
E12
9ft 1in


3△-33△
E12
11ft 6in

The T26E3 entered production in November 1944; this is serial No. 12, photographed at Aberdeen Proving Ground on December 22, 1944. This was one of 20 tanks from the first production batch of 40 tanks that were kept in the United States for further trials.



Michigan in November 1944. In spite of AGF's continued resistance to overseas trials, Barnes alerted the Ordnance office in Detroit at the end of October 1944 to prepare 20 heavy tanks for transfer to the ETO as soon as possible. The first ten tanks were completed by the end of November and a further 30 in December 1944.

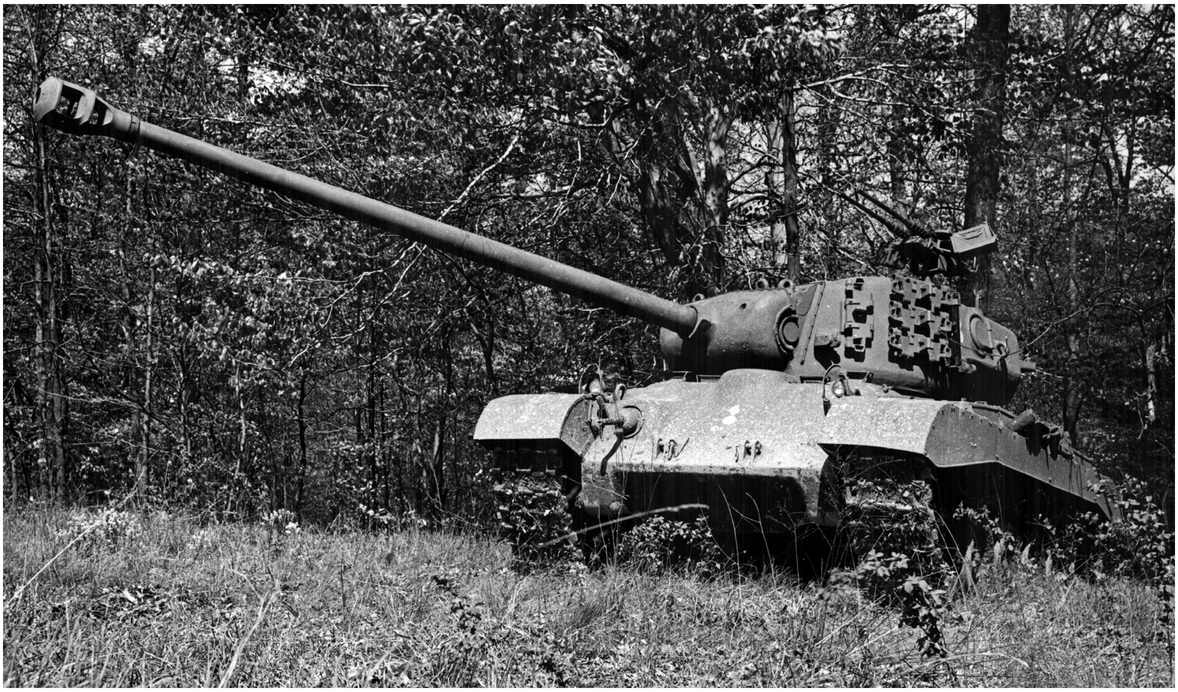
AGF tried to halt dispatch of the T26E3 to Europe on the grounds that it had not been declared "battle-worthy" by the Armored Board. Barnes complained that this would delay delivery by at least a month. Reports from the Ardennes fighting in December 1944 led to many complaints about the inadequacies of US tanks and reached Eisenhower's personal attention. Barnes was so determined that the new T26 be rushed to the ETO that he again outmaneuvered the AGF by appealing directly to the chief-of-staff, Gen George C. Marshall. To finally settle the growing controversy, on December 19, 1944, Maj Gen Russell L. Maxwell, Marshall's assistant chief-of-staff G-4 (Requirements), held a conference with his AGF counterpart, Brig Gen Albert Waldron, along with Barnes. Maxwell heard both sides of the argument, and sided with Barnes. He authorized the transfer of 20 T26E3 tanks to the ETO from the initial production run with an aim to have them arrive in Europe by January 15, 1945. The T26E3 was finally declared to be battle-worthy on January 20 and standardized on March 29 as the M26 heavy tank.

## T26E4 SUPER PERSHING

**OPPOSITE TOP**

The T26E4 mounted the lengthened 90mm T15E2 gun. This is one of the limited-series tanks on trials at Aberdeen Proving Ground in the later configuration without the external equilibrator.

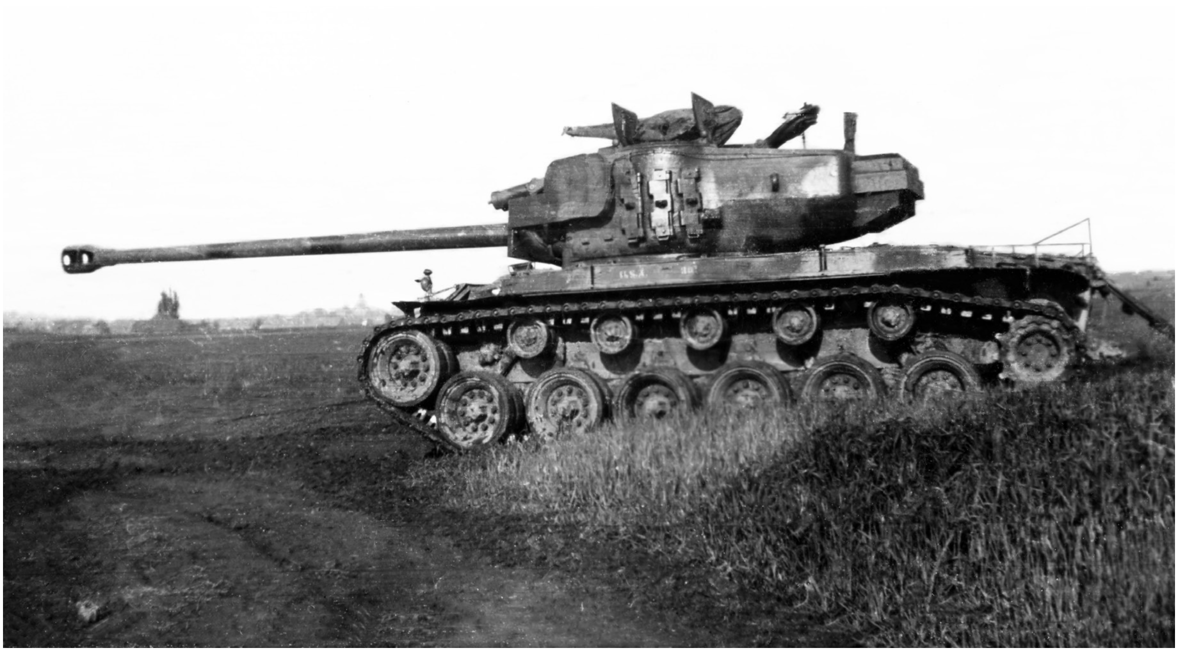
Encounters with the Tiger II tank in 1944 prompted Ordnance to develop a more powerful version of the 90mm gun, the lengthened T15. The T15E1 version of the gun was experimentally mounted on one of the T26E1 pilots. Trials revealed that a sturdier elevating mechanism was needed as well as a more powerful equilibrator. Owing to size constraints inside the Pershing turret, the equilibrator was mounted



awkwardly on the turret roof as a temporary expedient. This pilot was dispatched to the ETO in March 1945 where it was called the "Super Pershing." There were plans to build 1,000 T26E4 with the lengthened 90mm gun, but this effort was halted with the end of the war and only 25 were actually built. The production series of the T26E4 had the equilibrator inside the turret.

**BELOW**

A side view of the Super Pershing during operations in Germany in April 1945. This view shows the "bat wing" armor attached to the added mantlet armor plate.



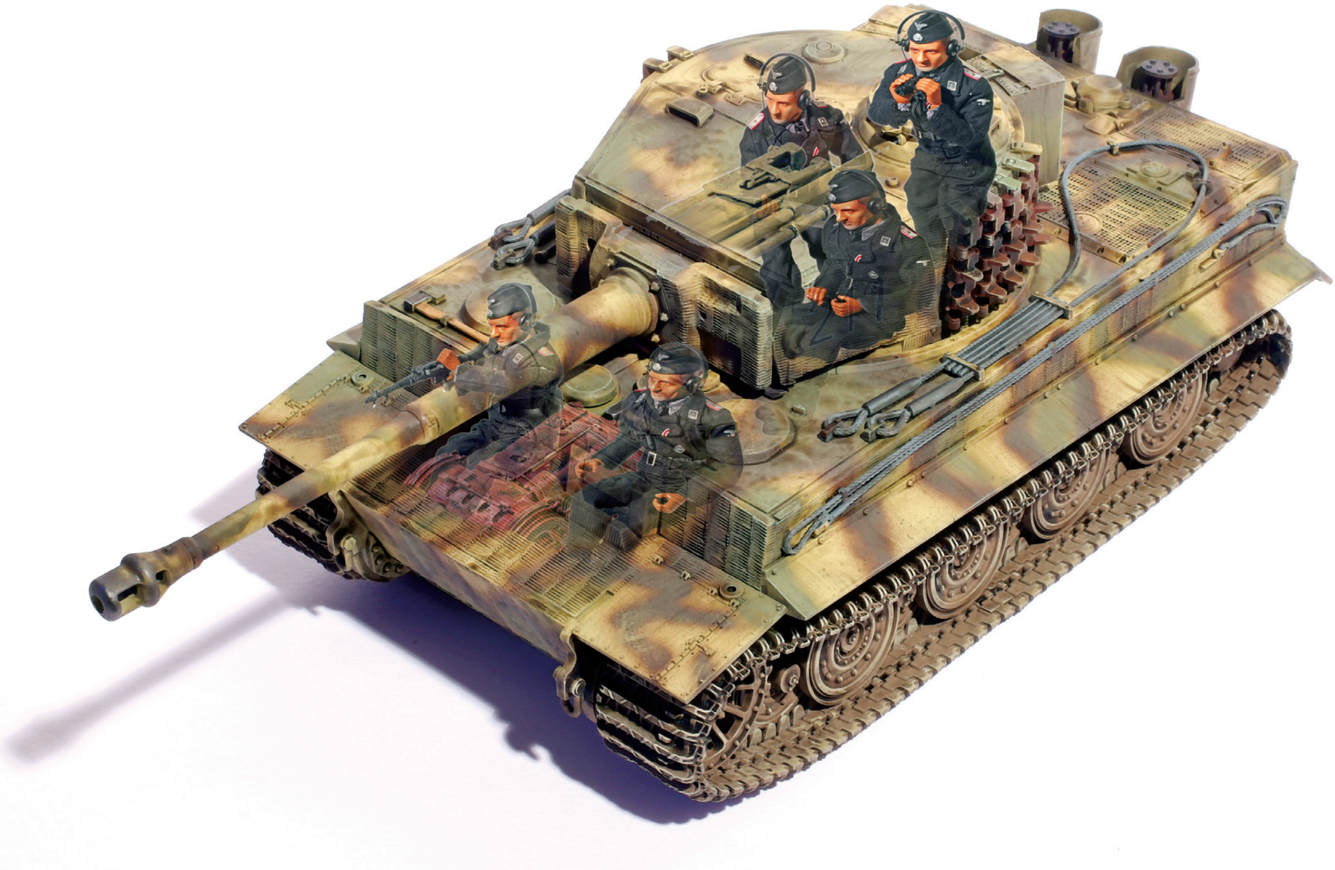
# TECHNICAL SPECIFICATIONS

## TIGER CREW LAYOUT

The Tiger tank commander (*Panzerführer*) was a lieutenant (*Leutnant*) if serving as the platoon commander, or an NCO (*Feldwebel*, *Unteroffizier*) in the remainder of the platoon. The tank commander was stationed in the left rear of the turret below an armored cupola. The cupola had a simple rail mount for attaching an MG 34 light machine gun for antiaircraft defense, but the Wehrmacht did not place as much emphasis on machine guns for use against ground targets as did the US Army. The tank commander instructed his crew via an intercom system (*Fusprech*).

Sitting in front of the tank commander was the gunner (*Richtschütze*) who was usually an NCO or senior enlisted man (*Unteroffizier*, *Obergefreiter*). The gunner sat with the main gun against his right shoulder. In the initial versions of the Tiger I, the gunner's main instrument was a TzF 9b binocular telescopic sight but as an economy measure, this was replaced by a TzF 9c monocular sight on the later models of the Tiger I. The gunner did not have a periscopic sight as in the Pershing for general observation during travel. As a result, he depended on the tank commander for targeting instructions. This was not a significant problem when the Tiger was static and looking for targets, but it slowed the firing cycle to about 20–30 seconds when the Tiger had to engage targets from the move.

The loader (*Ladeschütze*) stood in the right side of the turret during combat operations, or sat on a small fold-out seat. The position was relatively spacious



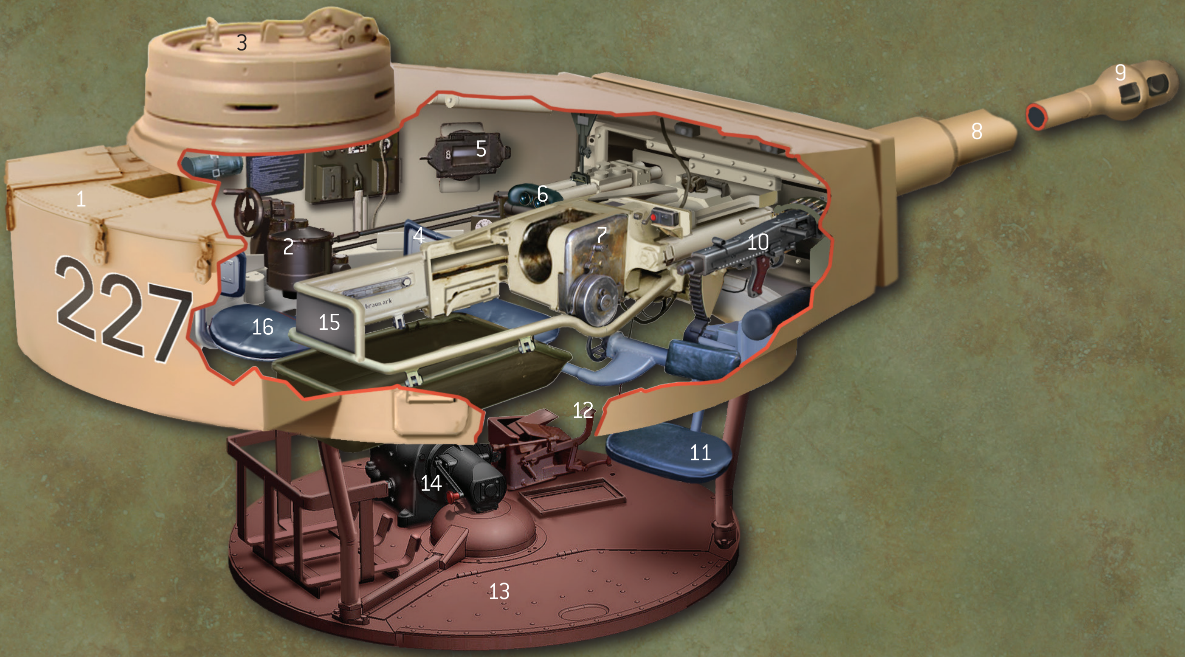
Crew layout in the Tiger I.

compared to the left side of the turret. The ammunition stowage was 92 rounds on the Tiger I and 72 rounds on the Tiger II. The 8.8cm ammunition was quite substantial, weighing 16kg (35lb) for the KwK 36 on the Tiger I with a length of 0.9m (36in). The 8.8cm projectiles for the KwK 43 gun on the Tiger II were longer and heavier, weighing about 23kg (50lb).

The driver (*Fahrer*) sat in the left front of the hull. After the tank commander and gunner, the driver was the most important and senior member of the crew since German practice was to encourage driver initiative in moving and positioning the tank, based on the tank commander's general instructions.

In contrast to US and British practice, the radio was positioned in the hull next to the radio-operator (*Funker*), who sat in the right front corner of the hull opposite the driver. The radio-operator's main role was to operate the tank's Fu 5 SE 10U radio transceiver which was located to his left. All tanks in a Tiger company operated on a single, predetermined channel; according to doctrine, only the company commander (and platoon commanders in an emergency) was to send voice messages so that they would be clearly picked up by all tanks in the company. A Tiger crewman from schwere Panzerkompanie *Hummel* recalled that in reality "everybody talks all the time, except the company commander, who can hardly get a word in edgewise." Besides operating the radio, the radio-operator also manned the bow machine gun, an MG 34 in a ball mount.

# TIGER I TURRET

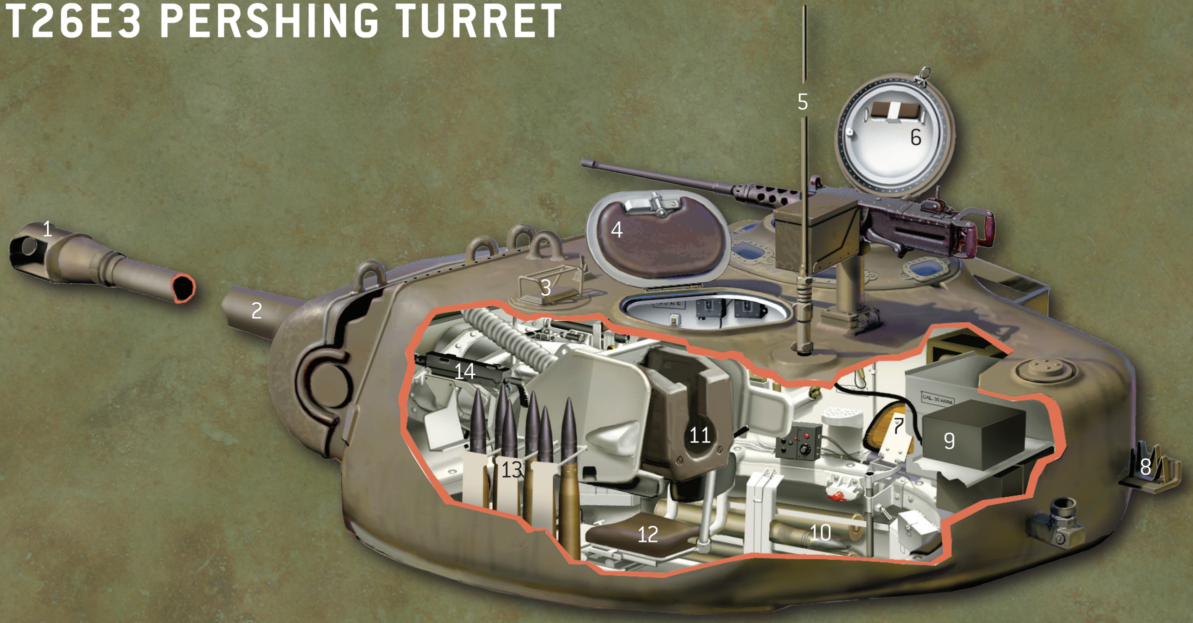


1. Turret stowage bin
2. Gunner’s turret stowage
3. Commander’s vision cupola
4. Gunner’s seat
5. Gunner’s side vision port
6. Gunner’s telescopic sight
7. 8.8cm gun breech
8. 8.8cm gun
9. Muzzle brake
10. Coaxial MG machine gun
11. Loader’s seat
12. Gunner’s foot control pedal
13. Turret basket floor
14. Turret traverse motor
15. Spent casing buffer and gun safety guard
16. Commander’s seat

## PERSHING CREW LAYOUT

As in the case of the Tiger, the Pershing had a five-man crew. In a US tank platoon, the platoon leader was usually a 2nd lieutenant; the platoon sergeant was a staff sergeant; and the remaining commanders “buck” sergeants. The tank commander’s station was on the right side of the turret and he had two seats, one at turret-race level for riding inside the tank and a folding seat on the turret wall for riding outside the cupola. The cupola had six laminated glass vision ports for all-round vision and the hatch had a fitting for either the standard M6 periscope or a 7× periscopic binocular. As in the Tiger, the Pershing commander communicated with his men via the tank intercom.

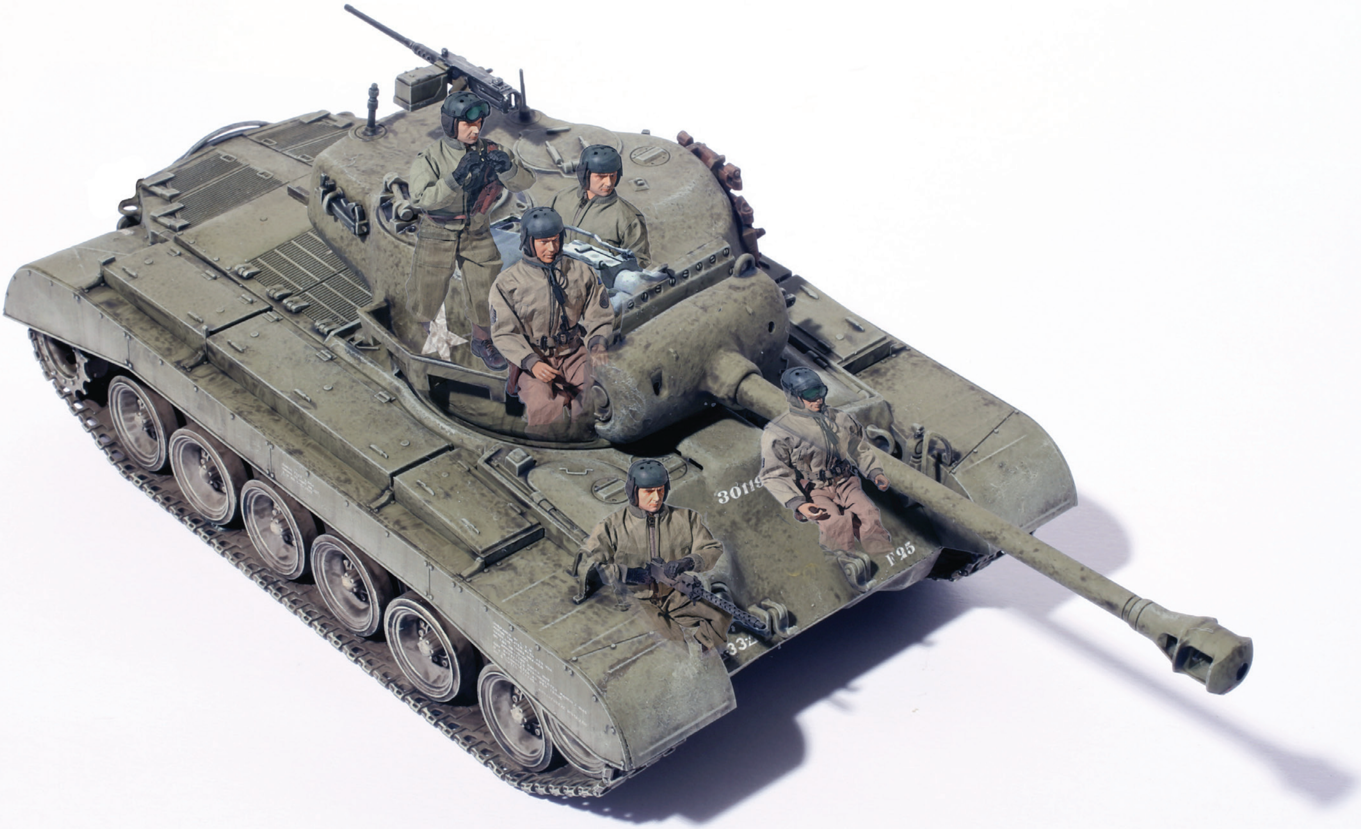
## T26E3 PERSHING TURRET



1. Muzzle brake
2. 90mm gun
3. Loader's periscope
4. Loader's hatch
5. Radio antenna
6. Commander's vision cupola with hatch open
7. Commander's seat
8. Stowage mount for .50-caliber machine gun
9. Tank radio transceiver
10. Ammunition stowage
11. 90mm gun breech
12. Gunner's seat
13. Loader's ready ammunition rack
14. Coaxial .30-caliber machine gun

The Pershing commander had a remote control for the power turret traverse which allowed him to swing the turret in the direction of the target if necessary. In contrast to the German practice, the US Army preferred to have the radio positioned behind the commander in the bustle for his operation. The standard type was the SCR-528 transmitter/receiver and an SCR-508 for the platoon commander. Loaders were trained to assist the commander in operating the radio. Pershings were fitted with field telephones on the rear wired into their intercom system which enabled accompanying infantry to directly communicate with the crew and coordinate tactics; Tigers lacked this feature.

The gunner sat immediately in front of the commander in the turret on the right-hand side. The gunner's sights in the Pershing were more extensive than those in the



Crew layout in the T26E3 Pershing.

Tiger, consisting of an M10F periscope in the roof with an integral telescope, plus a coaxial M71C telescopic sight. The unitary periscope was an advantage since it allowed the gunner to maintain situational awareness while the tank was traveling by observing the terrain and looking for targets; the Tiger gunner was essentially blind until the tank halted. The periscopic sight contained an aiming telescope, but against precision targets such as an enemy tank, the Pershing gunner would switch to the M71C telescope. This had 5× magnification.

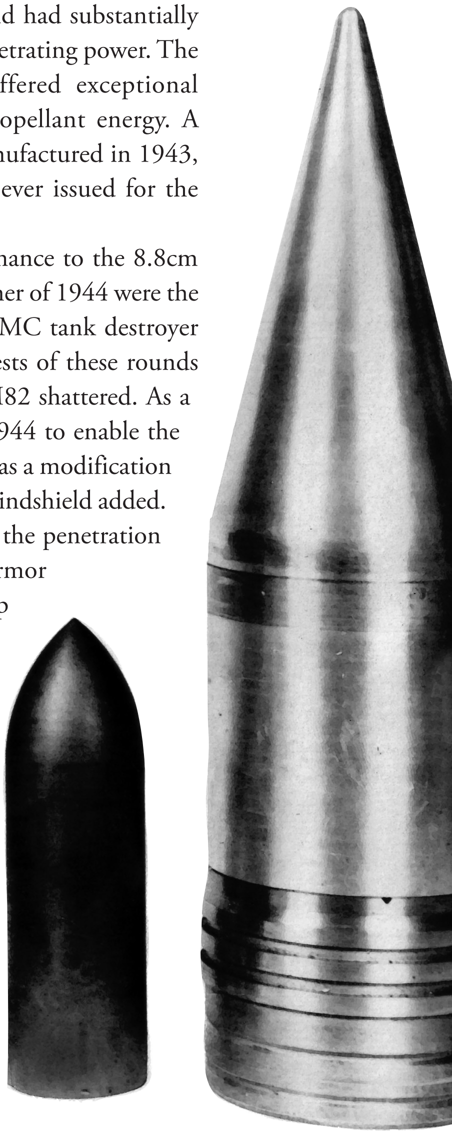
The loader was positioned in the left side of the turret and had a small folding seat when traveling; there was no turret basket in the Pershing. The driver sat in the left front corner of the hull and vision was provided by a traversable periscope mounted in the hatch above plus a second fixed periscope in the hull roof. The assistant driver, located in the right front of the hull next to the driver, was primarily responsible for operating the .30-caliber hull machine gun, and so he was commonly called the “BOG” (bow gunner).

## FIREPOWER

The Tiger I was armed with the 8.8cm KwK 36 L/56 gun that shared the ammunition types of the various 8.8cm antiaircraft guns. The standard projectile for tank fighting was the Panzergranate 39 (PzGr 39), a conventional armor-piercing projectile with a hard steel body, soft iron cap and ballistic cover with tracer (APBC-T). The PzGr 39 had a small 136g high-explosive cyclonite burster charge for causing additional damage after penetration. As was the case with most German tank guns, an 8.8cm high-velocity projectile with a tungsten-carbide core, the Panzergranate 40, had been developed for the KwK 36 gun. This type of ammunition was called armor piercing composite rigid (APCR) in Britain or high velocity armor piercing (HVAP) by the US Army. There were only about 9,700 rounds of this ammunition produced in 1942–43 so that by 1944, the PzGr 40 was seldom if ever issued in the West due to its scarcity, the greater need for such ammunition on the Eastern Front, and the adequacy of the normal APBC projectile when dealing with typical Allied tanks such as the M4 Sherman.

The 8.8cm KwK 43 on the Tiger II was developed around the ballistics and ammunition of the Rheinmetall FlaK 41, but was an entirely new gun. The associated ammunition was longer than that for the KwK 36 and had substantially more propellant. This led to greater velocity and more armor-penetrating power. The basic antitank round was a conventional APBC-T that offered exceptional performance due to the length of the gun tube and high propellant energy. A tungsten-carbide core round was developed, and 5,800 were manufactured in 1943, but there is no evidence that 8.8cm PzGr 40/43 rounds were ever issued for the Tiger II in the West.

The 90mm M3 gun in the Pershing had very similar performance to the 8.8cm KwK 36. The standard 90mm armor-piercing rounds in the summer of 1944 were the M77 and M82 APC-T which were used by the M36 90mm GMC tank destroyer when it first went into action in the ETO in October 1944. Tests of these rounds against the Panther tank's sloped glacis plate revealed that the M82 shattered. As a result, the new T33 APCBC-T was developed in late summer 1944 to enable the 90mm gun to penetrate the Panther glacis at 1,000yd. The T33 was a modification of the previous M77 that was re-heat treated and with a ballistic windshield added. An Ordnance report noted that "It is the most effective shot for the penetration of high obliquity 3–3.5 inch (76–89mm) thick homogenous armor plate. It has penetrated the front glacis plate of the Panther tank up to 1,100 yards range. It will not penetrate the glacis plate and gun mantlet of the King Tiger." The T33 became the standard armor-piercing ammunition for the Pershing tank. Ordnance had already developed a new HVAP projectile for the 76mm and 3in guns that used a tungsten-carbide core encased in a lightweight aluminum body. The T30E16 90mm HVAP was accepted for production in January 1945 on an emergency basis and began to arrive in the ETO in late February 1945. In total, some 43,000 T30E16 HVAP rounds were manufactured in 1945. A few rounds were issued to each tank, and the accompanying technical bulletin warned that "since tungsten carbide is a critical material, these projectiles should be used sparingly and only when the situation requires increased armor penetration." The US Army had noted the British preference for discarding-sabot ammunition on their



The trend in tank ammunition in 1943 was toward hyper-velocity projectiles that consisted of a dense and heavy tungsten-carbide core, shown here on the left, contained within a lightweight aluminum body, shown here on the right. This configuration was first used by the US Army with the 76mm T4 projectile, followed by 90mm types.

17-pdr tank gun, and Ordnance developed a similar round, the T32, for the 90mm gun. Testing revealed it to have inferior accuracy to the T30E16 HVAP, however, and its development was canceled in March 1945.

The experimental 90mm T15E1 gun was fitted in the single "Super Pershing" deployed in the ETO. This was intentionally designed to offer performance similar to the German 8.8cm KwK 43. The original 90mm T15E1 gun used a unitary round, but its 50in length and weight made it awkward to load inside the small Pershing turret. As a result, the improved T15E2 gun fitted to subsequent T26E4 tanks used two-part ammunition with a separate propelling charge and projectile. The T43 APCBC-T projectile was essentially the same as the T33 except for a modified rotating band and the enlarged T6 propellant case. Likewise, the T42 HVAP was an adaptation of the T30E16 with the enlarged T7 propellant case that was fitted with an extender cap at the front end to properly seat the shorter T44 projectile in the bore.

## PROTECTION

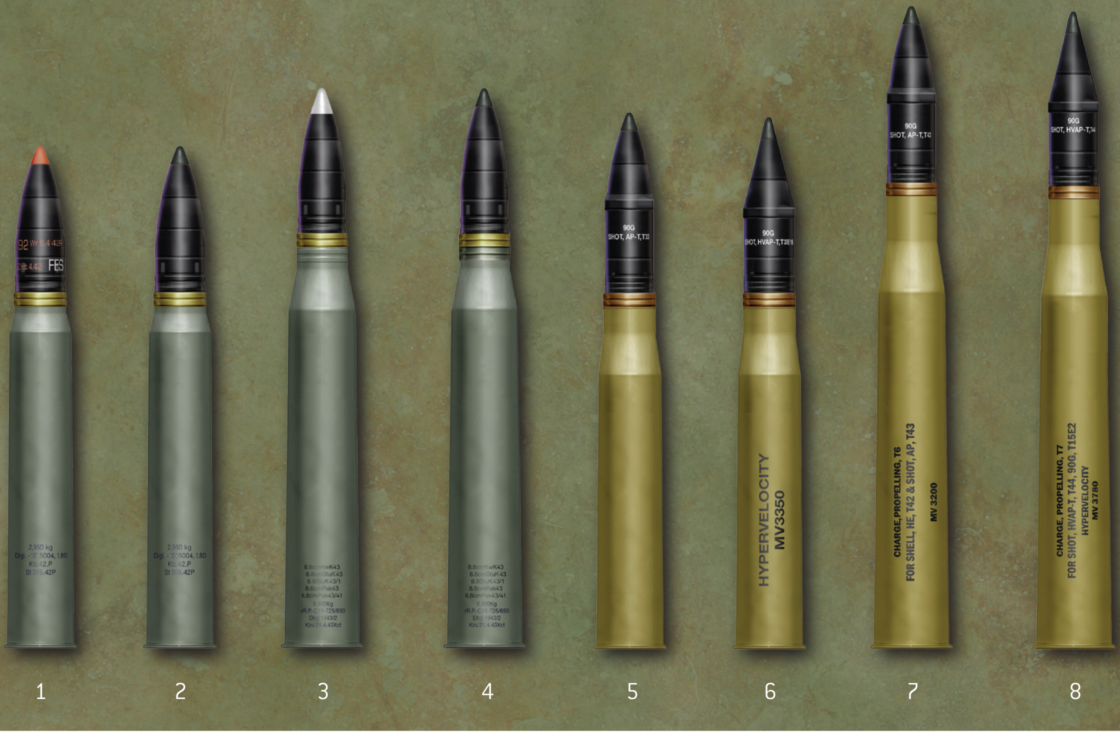
The armor protection of the Tiger I and Pershing were broadly similar, with the Pershing enjoying somewhat better frontal protection of the hull due to better sloping. The Tiger II was in a class all its own with exceptionally thick armor, as can be seen in the chart here. On the negative side, German armor quality began to suffer in late 1944 due to shortages of molybdenum and declining quality control. Soviet tests of captured Tiger II tanks were critical of the armor quality which led to premature shattering under attack. Nevertheless, it took an unusually hard blow to penetrate the Tiger II frontally and combat losses occurred more often due to penetrations of the thinner side armor. Indeed, there are few if any photos of frontal penetrations of the Tiger II in the West.

**Technical comparison: Tiger and Pershing armor protection***

| | Tiger I | Tiger II | T26E3 |
|---|---|---|---|
| Gun mantlet | 110mm @ 0° = 110mm | 65–100mm @ R = >65–100mm | 114mm @ R = >114mm |
| Turret front | 100mm @ 0° = 100mm | 190mm @ 10° = 193mm | 102mm @ R = >102mm |
| Glacis | 100mm @ 8° = 101mm | 150mm @ 50° = 233mm | 100mm @ 46° = 144mm |
| Lower bow | 100mm @ 21° = 107mm | 100mm @ 55° = 174mm | 90mm @ 53° = 150mm |
| Turret side | 82mm @ 0° = 82mm | 80mm @ 25° = 88mm | 76mm @ 7° = 78mm |
| Upper hull side | 82mm @ 0° = 82mm | 80mm @ 20° = 85mm | 76mm @ 0° = 76mm |

* Armor thickness (mm) @ angle from vertical (degrees) = equivalent thickness (mm); R = round/multiple angles.

# TIGER AND PERSHING AMMUNITION


1
2
3
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7
8
90G SHOT, AP-T,T33
90G SHOT, HVAP-T,T30E16
HYPERVELOCITY
MV3350
90G SHOT, AP-T,T43
CHARGE, PROPELLING, T6
FOR SHELL, HE, T42 & SHOT, AP, T43
MV 3200
90G SHOT, HVAP-T,T44
CHARGE, PROPELLING, T7
FOR SHOT, HVAP-T, T44, 90G, T15E2
HYPERVELOCITY
MV 3780

## Technical comparison: 8.8cm and 90mm tank gun ammunition

| Gun | 8.8cm KwK 36 | 8.8cm KwK 43 | 90mm M3 | 90mm T15E2 |
|---|---|---|---|---|
| Length | L/56 | L/71 | L/50 | L/70 |
| | | | | |
| APCBC-T projectile | 8.8cm PzGr 39 (**1**) | 8.8cm PzGr 39/43 (**3**) | T33 (**5**) | T43 (**7**) |
| Projectile weight | 10.0kg | 10.3kg | 10.9kg | 10.9kg |
| Round weight | 16.0kg | 22.7kg | 19.9kg | 23.2kg |
| Propellant weight | 2.5kg | 6.8kg | 3.8kg | 5.0kg |
| Initial velocity | 773m/sec | 1,000m/sec | 855m/sec | 975m/sec |
| Penetration @ 500m @ 30° | 110mm | 185mm | 109mm | 121mm |
| | | | | |
| HVAP-T projectile | 8.8cm PzGr 40 (**2**) | PzGr 40/43 (**4**) | T30E16 (**6**) | T44 (**8**) |
| Projectile weight | 7.5kg | 7.5kg | 7.6kg | 7.6kg |
| Initial velocity | 930m/sec | 1,130m/sec | 1,020m/sec | 1,145m/sec |
| Penetration @ 500m @ 30° | 156mm | 217mm | 202mm | 223mm |
| | | | | |
| HE-T projectile | 8.8cm SprGr L/4.5 | 8.8cm SprGr 43 | M71 | T42 |
| Projectile weight | 9.3kg | 9.5kg | 10.6kg | 10.6kg |
| High-explosive charge | 0.9kg | 1.02kg | 0.9kg | 0.9kg |

Sgt Nicholas Mashlonik (right) takes a look at the Tiger I his tank had knocked out in Elsdorf. Standing next to him is L.R. “Slim” Price, a civilian member of the Zebra Mission who was an Ordnance gunnery expert from Aberdeen Proving Ground.

## MOBILITY

The Pershing was significantly lighter than either the Tiger I or Tiger II, largely due to its origins as a medium tank and its more compact hull. It was closer to the Panther tank in terms of weight. By American standards, the Pershing was considered underpowered since it used essentially the same engine as the M4A3 medium tank, a vehicle that weighed nearly 10 tons less. However, by German standards it was significantly faster and had lower ground pressure. All three tanks were so heavy and wide that they caused transport problems on railroads and tactical bridges.

The Tiger I and Tiger II both suffered serious mobility issues due to their overstressed powertrain, which led to premature breakdowns during road marches. These problems were more serious on the Tiger II than on the Tiger I. For example, during the combat debut of the Tiger II on the Eastern Front in August 1944, sPzAbt 501 unloaded 45 Tiger II tanks at the Kielce railyard in Poland and conducted a 45km road march to the Ogłędów battlefield, with only eight tanks arriving on August 11 and 37 breaking down, mainly from final drive failures. Powertrain failures were exacerbated by shortages of spare parts and inadequate recovery vehicles. The table below illustrates Tiger availability rates on the Eastern Front in 1943–44 showing the percentage of operational Tiger tanks in combat on average during the month based on quartermaster reports. As can be seen, only about half of all Tigers were operational on average.

**Tiger operational strength 1943–44 on the Eastern Front by month**

| **Month (1943)** | **Apr** | **May** | **Jun** | **Jul** | **Aug** | **Sep** | **Oct** | **Nov** | **Dec** |
|---|---|---|---|---|---|---|---|---|---|
| Operational | 65% | 82% | 79% | 69% | 18% | 31% | 27% | 39% | 31% |
| **Month (1944)** | **Jan** | **Feb** | **Mar** | **Apr** | **May** | **Jun** | **Jul** | **Aug** | **Sep** |
| Operational | 43% | 45% | 54% | 40% | 64% | 73% | 60% | 48% | 64% |

Aside from shortages of spare parts, the deployment of the Tiger in separate battalions further exacerbated the maintenance problems. The Tiger II was on the bleeding edge of contemporary tank technology and had unusually high maintenance demands. One of the crewmen of sPzAbt 503 later complained that the Tiger II required ten hours of maintenance for every hour of use. Tiger battalions had only a single maintenance company which had very limited recovery and repair resources; Panzer divisions had an entire battalion. No dedicated armored-recovery vehicle was manufactured for either the Tiger I or the Tiger II. The nominal recovery vehicle for the Tiger battalion was the Zugkraftwagen 35t (SdKfz 20), a turretless version of the old Czechoslovak PzKpfw 35(t) light tank, operating in pairs. Since these were seldom available, three Famo SdKfz 9 schwerer Zugkraftwagen 18t halftracks served as substitutes in most units during 1943–44. These three had to be used together to extract a bogged Tiger, and they were vulnerable to enemy fire when recovering Tigers disabled at the front. The Bergepanther recovery vehicle based on the Panther tank became the new standard in 1944, and was first issued to Tiger II battalions in May 1944 with units getting two each as they became available. This was a significant improvement because of its 120-tonne winch capacity, though it usually took two Bergepanthers to recover a badly bogged Tiger II. The main problem was the inadequate number of recovery vehicles in each battalion.

Inadequate recovery assets forced many units to use other Tiger tanks as improvised recovery vehicles – a practice that was strongly discouraged since the Tiger powertrain was vulnerable to the stress of such actions. The fate of 3./sPzAbt 508 near Cisterna, Italy during May 23–25, 1944 provides an example of the problem of recovering Tiger tanks in combat. The company had 14 Tiger I tanks at the start of the operation, losing two to enemy fire in the opening days. During the fighting, three Tiger I tanks bogged down while moving over the embankment of the Mussolini Canal, one with transmission problems and two with fouled track that ran over the drive sprocket. With no recovery vehicles available, the company commander ordered six operational Tiger tanks to use their towing cables to recover the three bogged tanks. In the process, four of the six Tiger I tanks suffered their own transmission failures. Ordered to retreat, the five remaining Tigers towed a few of the damaged Tiger tanks back to Cori, but further transmission failures left only one in operational condition, which broke down shortly after arriving. Since the battalion's recovery vehicles could not get through, nine Tiger I tanks had to be blown up by their crews. Self-destruction of battle-damaged or broken-down tanks caused more Tiger losses than direct combat loss.

The Pershing tank had not received extensive testing at the time it was rushed into service, and it suffered lower reliability rates than the ubiquitous M4 medium tank. Of the original 20 T26E3 tanks that saw the most combat, the availability rate averaged 87 percent from March to May 1945. There was no dedicated recovery vehicle for the Pershing, though Ordnance did design the T12 tank-recovery vehicle for this role. Existing vehicles such as the M32 tank-recovery vehicle proved adequate and there were five in each tank battalion.

### Technical comparison: mobility data

| | **Tiger I** | **Tiger II** | **T26E3** |
|---|---|---|---|
| Weight (combat loaded) | 57 metric tonnes | 68 metric tonnes | 42 metric tonnes |
| Engine | Maybach HL210P45 | Maybach HL230P30 | Ford GAF |
| Horsepower | 650hp | 650hp | 500hp |
| Hp/weight ratio | 11.4hp/t | 9.5hp/t | 11.9hp/t |
| Ground pressure | 1.04kg/cm$^2$ | 1.07kg/cm$^2$ | 0.88kg/cm$^2$ |
| Maximum road speed | 38km/h | 35km/h | 48km/h |
| Fuel capacity | 534 liters | 860 liters | 474 liters |
| Road range | 140km | 170km | 160km |

# THE COMBATANTS

## TIGERS IN THE WEST, SUMMER 1944

The Tiger tank was primarily deployed in heavy-tank battalions (*schwere Panzer-Abteilungen*) that were assigned at corps or army level for specific missions. Each consisted of a headquarters platoon and three line companies with a total of 45 Tiger tanks and 649 men. The actual strength of Tiger battalions in combat was usually much lower, due to combat attrition, shortages of replacement tanks, and the Tiger's low reliability.

It is a popular misunderstanding that the US Army in the ETO fought against the Tiger tank on a regular basis. The main reason for this myth was that GIs indiscriminately used the term "Tiger" to refer to any German tank, in much the same way that any German artillery piece was called an "88" whether it was in fact a 7.5cm PaK 40 antitank gun or a 10.5cm leFH 18 field howitzer. In reality, combat encounters with the Tiger were a rare occurrence for the US Army, if for no other reason than the relative scarcity of Tiger tanks in the West. On July 1, 1944 at the height of the Normandy fighting, there were only 42 Tigers operational in the West. By way of comparison, there were over 6,000 Allied tanks in Normandy at this point in time. The chart below summarizes Tiger strength in France in the summer of 1944. The heavy losses listed for September are due to an accounting correction, with the Wehrmacht belatedly writing off the many disabled Tiger tanks abandoned during the retreat from France.

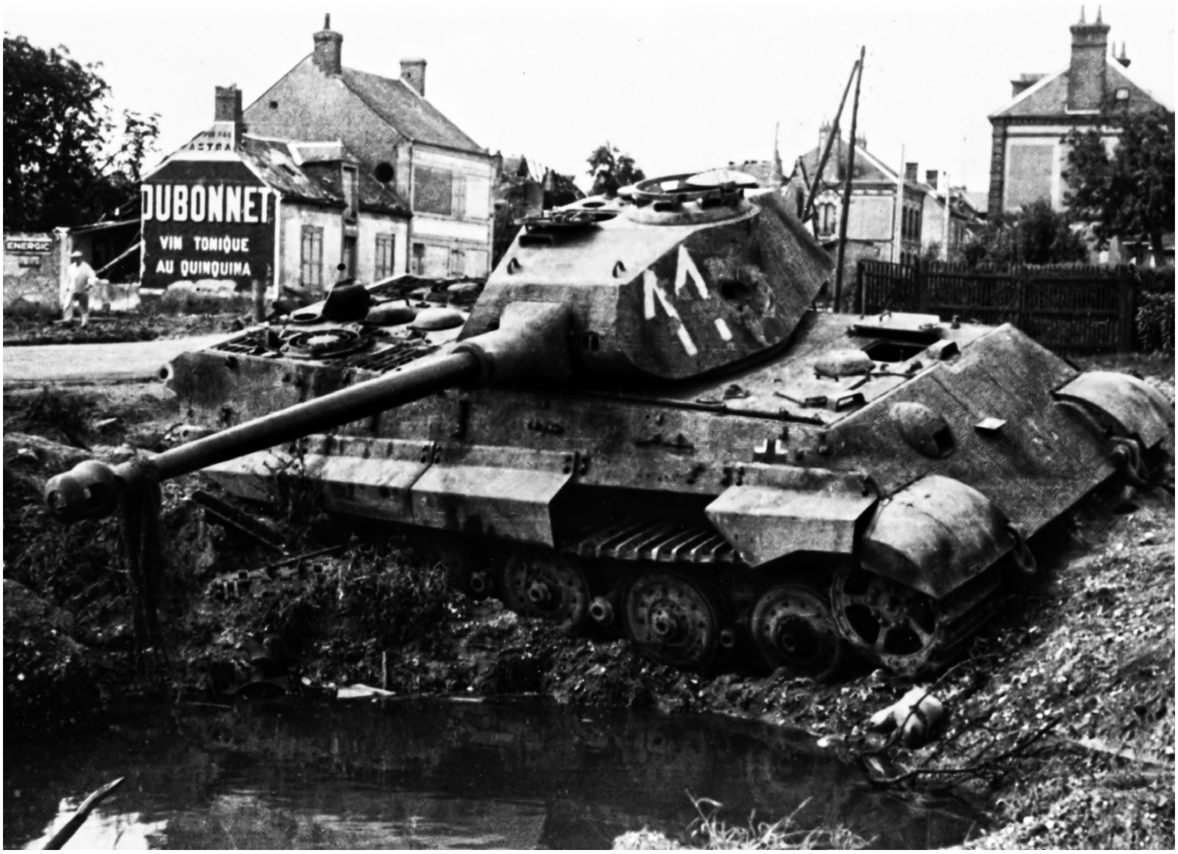
There was little or no contact between the US Army and Tiger tanks in Normandy in June–August 1944 since both German Tiger I battalions, sSS-PzAbt 101 and sSS-PzAbt 102, fought in the Caen sector against British and Canadian forces. The Heer's sPzAbt 503, equipped with a mixture of Tiger I and the new Tiger II, also fought exclusively in the British/Canadian sector during June–July 1944. Of the 187 Tiger I tanks lost in the West in 1944–45, half (93) were lost in the June–August fighting in Normandy, all but three to British/Canadian forces.

### Tigers in the West, summer 1944

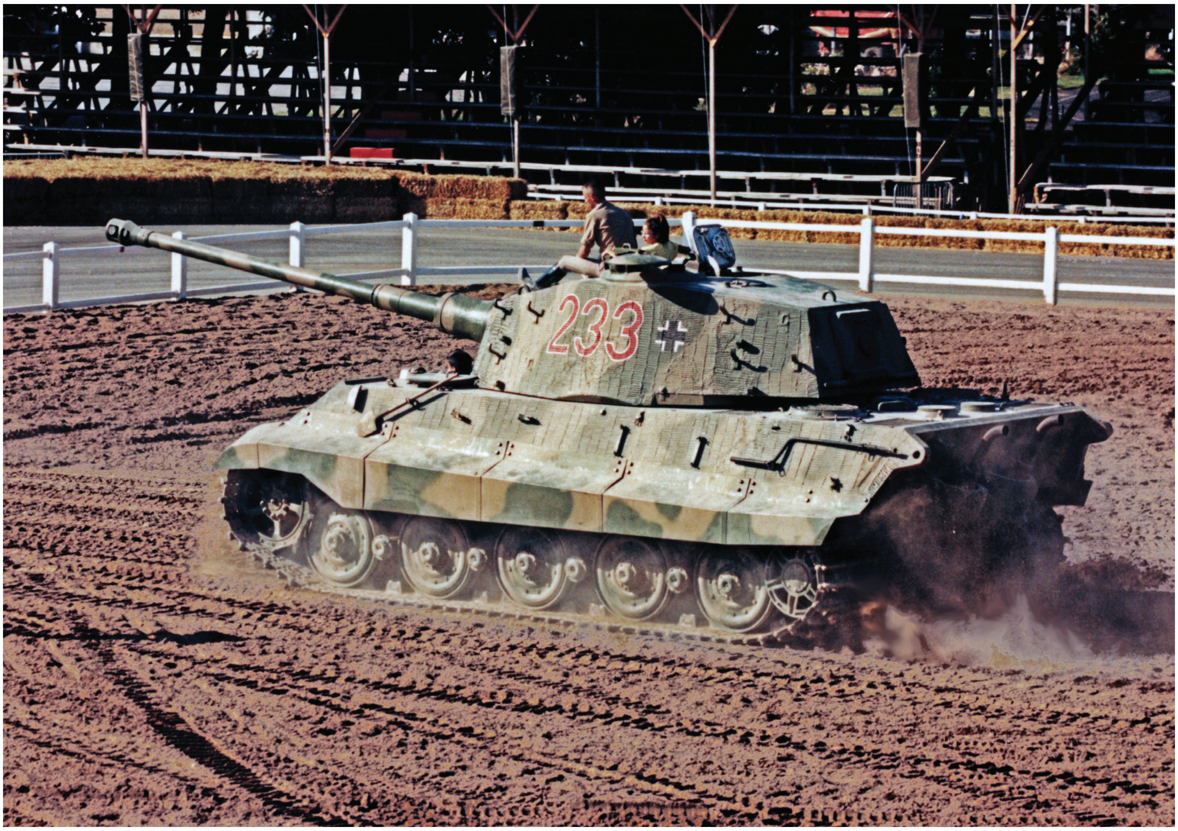
| **Strength** | **June** | **July** | **August** | **September** |
|---|---|---|---|---|
| Tiger | 6 | 42 | 84 | 75 |
| Tiger I (Befehls)* | 6 | 3 | 0 | 8 |
| **Losses** | **June** | **July** | **August** | **September** |
| Tiger | 17 | 13 | 13 | 91 |
| Tiger II | | | | 23 |
| Tiger I (Befehls) | 2 | 1 | 2 | 2 |

* Befehls: command tank.

The US Army actually had more contact with the Tiger II in the summer of 1944 than with the earlier Tiger I. The first US combat encounters with the Tiger II involved Panzer-Kompanie (FKL) 314 that was attached to the Panzer-Lehr-Division. This *Funklenk* (radio control) unit had been formed in early 1944 to employ remote-control



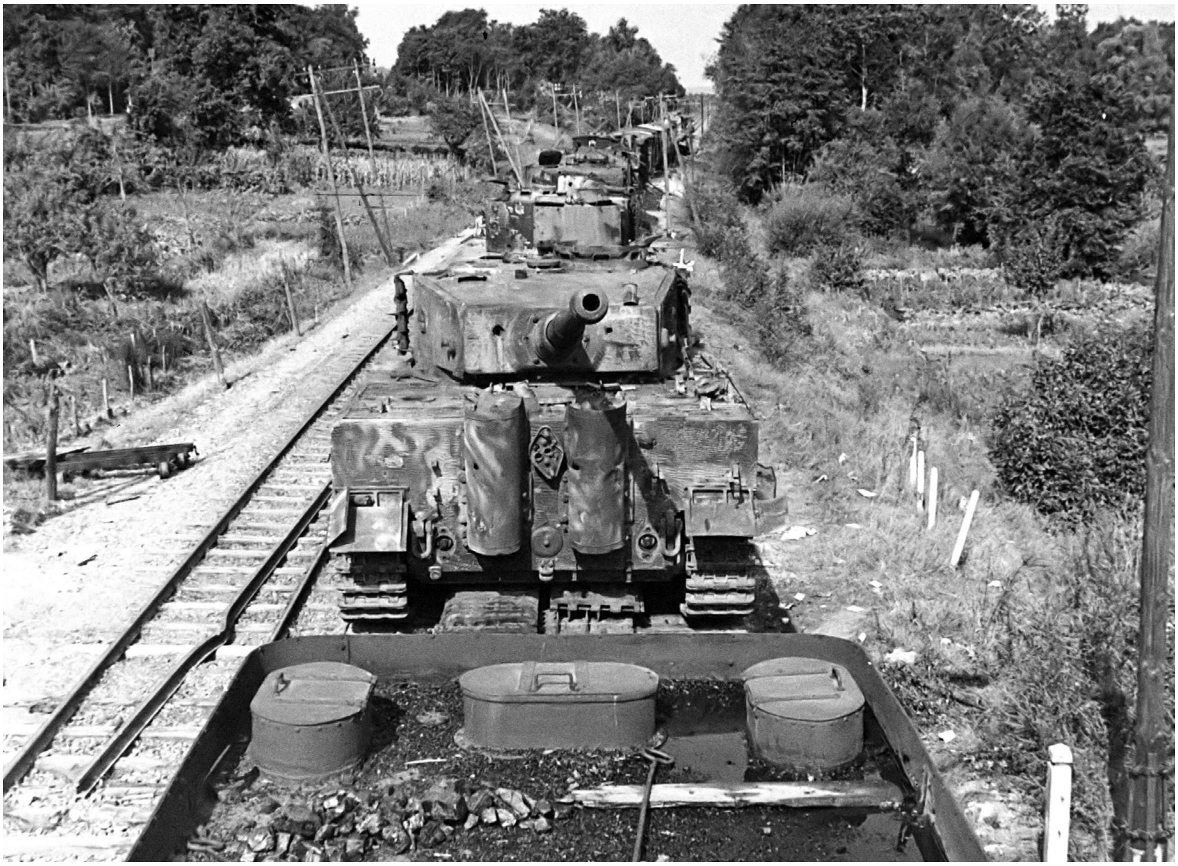
The first encounter by the US Army with the Tiger II tank was with the hapless Panzer-Kompanie (FKL) 314 that had been issued some of the first Tiger II tanks off the production line with all of the associated mechanical problems. This particular example broke down and was abandoned in the early-morning hours of August 17, 1944 on Boulevard Kellerman in Châteaudun. Later, it was hit on the left side by an M18 76mm GMC of the 818th Tank Destroyer Battalion and subsequently pushed off the road into a crater as shown here.



This Tiger II tank, No. 123, of 1./sSS-PzAbt 101 broke down with engine problems on August 23, 1944 during fighting against US Army forces in the Mantes bridgehead near Brueil-en-Vexin. It was later salvaged by the French Army and eventually turned over to the tank museum at Saumur, where it is shown here during one of their annual demonstrations.

demolition vehicles such as the Borgward B IV, with the tanks serving as command vehicles. In March 1944, the unit received the first five Tiger II tanks off the production lines. When deployed in France in May 1944, the Tiger II tanks were so plagued by maintenance issues that they were dumped at the repair base at Châteaudun until they could be evacuated back to Germany. In the event, they were never evacuated and the five Tiger II tanks remained inoperative at the depot through August 1944. As Gen George S. Patton's Third US Army approached the town on August 18, two of the Tiger II tanks were set up in static defensive positions outside the town. They engaged approaching US troops and one was knocked out by artillery fire and the other was abandoned by its crew and set on fire. The remaining three tanks in the town center attempted to escape, but broke down a short distance outside town.

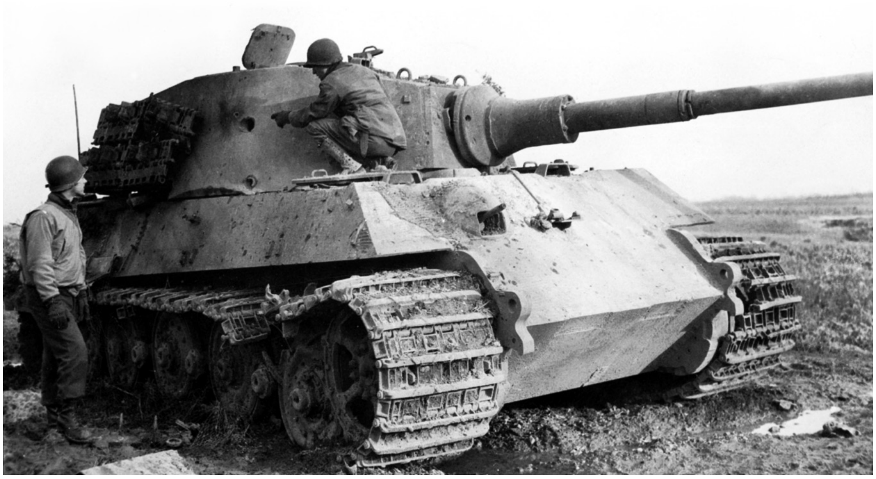
Further encounters with the Tiger II occurred a few days later in the area of the Mantes bridgehead across the Seine River. The decimated 3./sPzAbt 503 had been pulled out of Normandy to re-equip with new Tiger II tanks. This company is well known since it took part in a heavily photographed propaganda demonstration at the Mailly-le-Camp training base on August 11, 1944. These early tanks were mechanically troublesome and two broke down with transmission failures during the parade. These two were sent back to Germany and were the only ones to survive the August 1944 fighting. During transit to the front on August 12, a third tank was knocked out by air attack. The remaining 11 Tiger IIs arrived near Paris on August 17–18 and drove through the city to intimidate the restive French population, which was on the verge of an uprising.



The US Army's sole encounter with the Tiger I in France occurred on August 28, 1944 when the 486th AAA Automatic Weapons Battalion of the 3rd Armored Division intercepted a train with three battle-damaged Tiger I tanks being sent back to Germany for rebuilding. The M15A1 antiaircraft halftracks swept the train with 37mm automatic cannon and .50-caliber machine-gun fire, preventing the German crews from manning the tanks. As can be seen from this view, the Tiger I tanks were fitted with the narrow transport track since the normal track was too wide for use on railroad flat-cars.

The Tiger II company, down to ten tanks after another one broke down on August 19, finally arrived near Mantes on August 21. Over the next several days, the tanks supported 18. Luftwaffe-Feld-Division in counterattacks against the Seine bridgehead of the US 79th Infantry Division. They engaged in combat with M10 3in GMC tank destroyers and M4 tanks, knocking out several American vehicles, but losing three Tiger II tanks to flank shots by the M10 tank destroyers. On August 26, the company was reinforced by several new Tiger II tanks of the retreating 1./sSS-PzAbt 101. By late August, the American forces had pushed out of the Mantes bridgehead and were approaching the 3./sPzAbt 503 repair facility near Marines where several battle-damaged Tiger II tanks were parked. During the retreat on August 29–31, the damaged tanks were torched and abandoned. The few surviving tanks broke down and were destroyed by their crews.

The first US Army contact with the Tiger I in France occurred on August 28, 1944 as a spin-off of the Caen fighting. Three battle-damaged Tiger I tanks had been put on railroad flat-cars and sent toward Germany for rebuilding. The train reached as far as Braine, northeast of Paris, where it was intercepted by elements of the US 3rd Armored Division. Some M15A1 antiaircraft halftracks of the 486th AAA Automatic Weapons Battalion spotted the train and saw the German troops try to get into the stationary Tigers. They swept the troops away from the tanks using the M15A1s' 37mm automatic cannons and .50-caliber heavy machine guns. As a result, the damaged tanks were captured before they could engage the American force.



In November 1944 sPzAbt 506 was heavily engaged against the US 2nd Armored Division in the Roer fighting between Aachen and Jülich. This Tiger II was knocked out by the 702nd Tank Destroyer Battalion, suffering a debilitating hit on its right track and final drive, followed by a side shot through its thinner turret armor. This photo was taken on November 28, 1944, some days after the engagement, when the tank was being inspected.

## TIGERS ON THE ROER FRONT

There were few if any Tiger tanks operational against US units in the ETO until mid-October 1944, part of the general paucity of German tanks following the Normandy defeat. In September 1944, Hitler decided to stage a surprise Panzer offensive in the Ardennes in the late autumn or early winter, and so a large portion of the Panzer force was hoarded in western Germany.

Equipped with 45 Tiger II tanks, sPzAbt 506 was deployed in the Netherlands at the end of September 1944 and fought in the battles around Arnhem. In early October, it was transferred to General der Panzertruppe Erich Brandenberger's 7. Armee and still had 43 tanks of which 33 were operational. In response to the American attacks to capture Aachen, Brandenberger decided to use this valuable Panzer reserve in hopes of staunching the American breakthrough. Aachen was the first major German city in the West threatened with capture, and Hitler insisted that it be defended to the last man. A key town on the northern approaches to Aachen was Alsdorf, and its recapture was seen as the key to holding back the American offensive in this sector. At the time of the German counterattack on Alsdorf on October 8, 1944, only five Tiger II tanks had arrived and there were only seven tanks and 20 assault guns committed to the attack on the town. The Tiger II proved to have poor operational mobility since moving it long distances on its own power led to excessive breakdowns, and moving it by rail was complicated by both its weight and excessive width. Furthermore, it was dangerous to move Tiger II tanks by rail transport due to their vulnerability to Allied air interdiction.

Brandenberger ordered the local commanders to retake Alsdorf at all costs, otherwise Aachen would be lost. The main infantry attack on October 8 failed and three of the Tiger II tanks were knocked out near the town by the 743rd Tank Battalion and US antitank guns. Having only just been been shifted to this sector, sPzAbt 506 was moved again the following day to deal with the new threat of the US VII Corps encircling Aachen from the south. It supported 116. Panzer-Division's attack toward Bardenberg on October 11, but in the process, only three of the battalion's 17 operational Tiger II tanks were still running by day's end, the rest broken down or battle-damaged. The battalion remained in this sector northeast of Aachen for much of October 1944, engaging in sporadic, small-scale skirmishes with elements of the First US Army whenever it could get a few of its trouble-prone Tiger II tanks into running condition. By the third week of October, sPzAbt 506 had lost eight Tiger II tanks and had to send back two severely damaged tanks for rebuilding. On October 22, the battalion had an operational strength of 18 tanks from the original 45. It was pulled back for rest and refitting. In spite of Brandenberger's hope that such a powerful unit would have a decisive effect in the fighting, its influence was negligible. Not only did it lack operational mobility for movement from sector to sector, but it lacked tactical mobility because the tanks were susceptible to delays when having to cross bridges and other terrain features.

After being pulled out of the line, sPzAbt 506 was able to repair its many damaged tanks and its strength returned to 36 operational Tiger II tanks by the first week of November 1944. It was deployed again in the heavily contested battleground between Aachen and Jülich on the Roer River. It saw its most concentrated fighting in late November 1944 during attempts to repulse Operation *Queen*, the First US Army offensive toward the Roer. By the end of November, it was down to 11 operational Tiger II tanks, having lost ten in the Roer fighting and having 18 damaged and under repair.

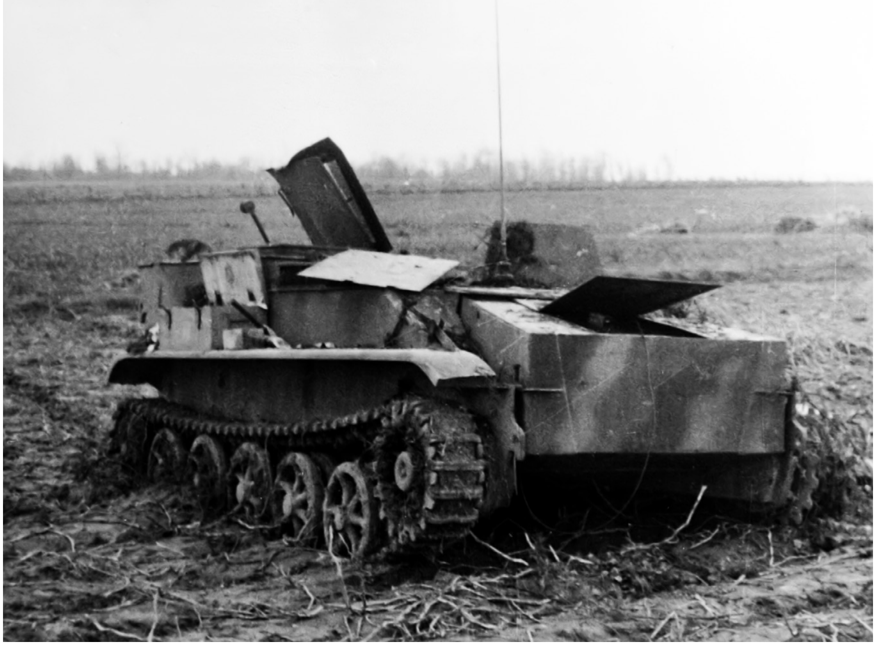
## DEMOLITION TIGERS

One of the last Tiger I units in the west, sPzAbt (FKL) 301, also took part in the Roer fighting. This unit is also at the heart of the duel later in this book, so it is worth paying special attention to its history. Formed in September 1944 at Grafenwöhr, sPzAbt (FKL) 301 was another demolition battalion, equipped with 31 Tiger I tanks. The table of organization called for an allotment of three Borgward B IV Ausf C remote-control demolition robots for each line tank. The Borgward B IV could be driven into the combat area in the usual fashion since it had a driver's compartment. Once in combat, its remote control was activated and it was directed via radio commands from the *Lenk-Panzer*, a Tiger I fitted with a control radio. The B IV had a wedge-shaped container with a 450kg (990lb) high-explosive payload at the front of the vehicle. This container slid off the vehicle by remote control, and once the B IV had retreated to safety, the explosive charge could be detonated by radio. Following training, the battalion was sent to the front at the end of October 1944 and was attached to 116. Panzer-Division.

The unit first saw combat on November 19, 1944 in support of 246. Volksgrenadier-Division near Jülich against the attacking US 2nd Armored Division. That day, 1./sPzAbt (FKL) 301 claimed two M4 medium tanks, not confirmed in US accounts. The following day, 1./sPzAbt (FKL) 301 claimed to have knocked out 12 M4 medium tanks; actual losses were five tanks of D/66th Armored near Ederen. The Tiger I battalion suffered undetermined losses that day, including the commander of 2./sPzAbt (FKL) 301. Two Tiger I tanks were knocked out during the fighting around Merzenhausen on November 21. The next day, the battalion shifted 1./sPzAbt (FKL) 301 south to the Lohn area to support 3. Panzergrenadier-Division; sPzAbt 506 also had Tiger II tanks in the area at the same time, making it difficult to disentangle reports of Tiger tanks in US records. Two M4 medium tanks of the 743rd Tank Battalion, supporting the US 30th Division, became trapped in a minefield and were knocked out by three Tiger tanks located on a hill overlooking the area. Towed 3in guns of the 823rd Tank Destroyer Battalion engaged the Tigers with the new HVAP ammunition, and while at least one Tiger was damaged, none was lost.

Curiously, US records indicate that sPzAbt (FKL) 301 sent four Borgward B IV demolition vehicles against the US forces. One was hit by gunfire from a towed 3in gun of Company C, 823rd Tank Destroyer Battalion at a range of 400yd and it "went up with a tremendous explosion, the concussion of which caused damage within our lines." By November 23, sPzAbt (FKL) 301 had suffered significant combat and mechanical losses leading to the concentration of remaining operational Tiger I tanks in a single company; only seven tanks were still operational. The battalion claimed to have knocked out 30 American tanks in the November fighting, which was a significant exaggeration judging from US records.

Another attempt to use the Borgward B IV was made on December 2, when one was launched toward American positions located near a dairy farm. The robot vehicle became stuck in an irrigation ditch before reaching its target. The battalion commander, Hauptmann Krämer, became so frustrated at the lack of tactical utility of the demolition vehicles that in a report to Generaloberst Heinz Guderian's Generalinspekteur der Panzertruppen headquarters, he recommended that they be shipped back to the base in Eisenach that was responsible for these radio-control units:



This is one of four Borgward B IV Ausf C demolition vehicles launched by sPzAbt (FKL) 301 against US positions around Lohn, Germany, on November 22, 1944. Two broke down before reaching their objective, including this one, which lost its left track in the glutinous mud of the farm field. The two others exploded when hit by 3in antitank guns of the 823rd Tank Destroyer Battalion. The explosive container is still in place on the front of this vehicle, though the inspection hatch has been opened, probably by curious US troops.

> During the entire period of employment of the battalion since 16 November 1944, because of both tactical and technical reasons, it was impossible to utilize this unit as a radio-control battalion. The battalion was employed like a normal Panzer-Abteilung as part of a Panzer-Division for defense against enemy tanks or employed in tank sections of up to five Tigers for mobile defense and counterattacks. All of the operations in which B.IVs were sent into combat resulted in complete failure or at the most partial success. Due to the small number of Lenk-Panzer, only a few B.IVs could be employed at one time and mostly they were destroyed by heavy enemy fire (artillery, anti-tank gun, mortars, and aircraft) before reaching their objective. In no case has the employment of this expensive equipment been justified by the end result. Furthermore, as a result of continuous fuel shortages, the fuel supply had to be allocated to the Tigers and the essential command, supply, and recovery units. In order not to imperil the combat readiness of the available Tigers, the B.IVs were towed by the supply vehicles during movements.

Fighting continued on December 6 with the battalion strength returning to 11 operational tanks. The main focus of the fighting was a counterattack by 3. Fallschirmjäger-Division against the US 415th Infantry Regiment (104th Division) in the town of Lucherberg. During the fighting that day the Tiger I crews claimed to have knocked out 11 M4 medium tanks, though there is little evidence in American records to suggest any significant tank fighting in that area. Two Tiger I tanks were lost inside the town during close combat against US infantry, one to a 57mm antitank gun and one to a bazooka hit against the vulnerable rear end. Later that day, sPzAbt (FKL) 301 was pulled back over the Roer for replenishment and reconstruction.

In one of the few successful uses of the B IV demolition vehicles, several were dispatched to demolish the *Autobahn* bridge over the Roer north of Birkesdorf that was being threatened by an American tank advance. The first two attempts on the evening of December 12 to use them in the prescribed manner were failures when the vehicles were hit by US fire, overturned, or failed to explode. After dark, a team of volunteers under Oberleutnant Stuke, the battalion's remote-control specialist, unloaded several charges on the bridge using the Borgward vehicles, manually wired them together, and remotely detonated them in the early-morning hours of December 12, rendering the bridge unusable for vehicular traffic.

After having been pulled out of combat, sPzAbt (FKL) 301 repaired its many damaged Tiger I tanks and was back up to a total strength of 21 tanks by the middle of December 1944. The plan was to commit the battalion to the Ardennes fighting under the direction of 9. Panzer-Division as part of an operation to relieve the trapped 2. Panzer-Division in the Celles pocket beyond Bastogne. By the time the battalion was ready to move on Christmas Day, the mission was hopeless and the unit was directed back into the reserves. It was sent to the Netherlands in mid-January 1945 and took part in fighting against British troops during Operation *Blackcock* in the last week of January. At least two Tiger I tanks were lost in the fighting and the unit was again withdrawn back into Germany where it was largely immobile due to a shortage of fuel and parts. Its next combat mission was again with LXXXI. Armeekorps in late February 1945 in the attempts to stop the First US Army's Operation *Lumberjack*. This fighting is the focus of the Combat chapter of this book.

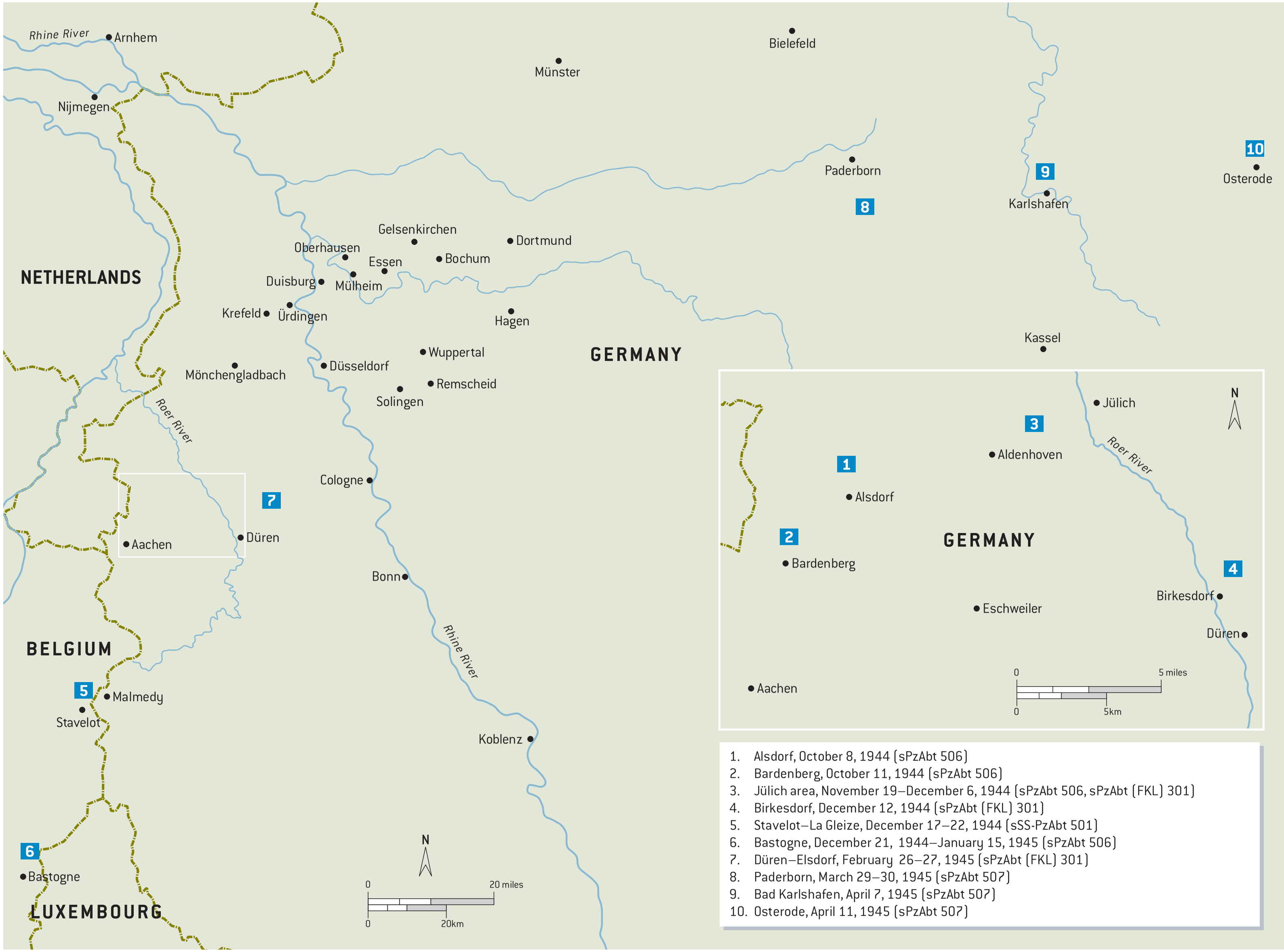
# TIGERS IN THE ARDENNES

The most famous use of Tiger tanks against the US Army in the ETO occurred during the Ardennes offensive in December 1944. Two units were committed to the fighting, sPzAbt 506 and sSS-PzAbt 501. The freshly equipped sSS-PzAbt 501 was undoubtedly the more famous of the two units participating in the Ardennes offensive, if for no other reason than its prominent role in German propaganda films from the opening days of the attack. It was attached to 1. SS-Panzer-Division *Leibstandarte Adolf Hitler* and started the campaign with 45 Tiger II tanks. The battalion was attached to the divisional spearhead, Kampfgruppe *Peiper*. SS-Obersturmbannführer Joachim Peiper was concerned, however, that the big tanks would not be mobile enough on the narrow Belgian country roads in the race to the Meuse bridges. He left them in the rearguard, mainly in support of 3. Fallschirmjäger-Division. Several were present with Kampfgruppe *Peiper* when it was encircled around La Gleize and forced to abandon its tanks. Other companies of sSS-PzAbt 501 were involved in a series of skirmishes with US forces attempting to contain the breakthrough of Kampfgruppe *Peiper*. In the week of fighting through Christmas, the battalion lost 13 Tiger II tanks, four to American tank or antitank gun fire and the rest abandoned due to combat damage, mechanical breakdown, or encirclement. By December 28, sSS-PzAbt 501 was down to about 15 operational tanks which were shifted to the southern sector to take part in the Bastogne fighting. Two more Tiger II tanks were lost in the Bastogne sector and the battalion was pulled out of the Ardennes in mid-January 1945 as part of a shift of the forces of 6. SS-Panzerarmee to the Eastern Front to deal with the Red Army's January offensive. On January 15, the battalion had 18 operational tanks of the original 45, with 14 lost and 13 damaged and in repair.

As previously described, sPzAbt 506 had been fighting in the Roer sector since October 1944 and so was understrength at the start of December. It received 12 new Tiger II tanks starting on December 10. The battalion was reinforced further with a company of Tiger I tanks from schwere Panzerkompanie *Hummel*, which was attached as its 4. Kompanie. On December 18–19 the battalion was moved by train from the Roer sector to the Ardennes and was committed in support of 5. Panzerarmee in the fighting around Bastogne. It was deployed to support an attack of 18. Volksgrenadier-Division on December 21, but the drive beyond Bastogne was decisively stopped in the days around Christmas. Two Tiger II tanks were knocked out in this fighting. As the tide turned in the American favor, the battalion supported the Panzer-Lehr-Division in the defenses on the approach to Houffalize. On January 13, 1945, one Tiger II broke down, and a second sent to assist it was knocked out when hit eight times by an M4A3 (76mm) of the 6th Armored Division. On January 16, the battalion was covering the key rail junction at Bourcy, northeast of Bastogne, against the approaching 6th Armored Division. One of the American tankers recalled that "as we approached the top of the hill, we saw five Tiger Royals waiting for us. Our Sherman tanks were no match for them. Our tank shells bounced off the Royals like ping-pong balls. It was quite a show when the Air Corps came in to take care of them. We had front row seats for the performance." Two days later, sPzAbt 506 had only 17 tanks operational. When the US Army broke through the German defenses near

**OPPOSITE**

Tiger engagements along the German frontier, October 1944–April 1945.


Rhine River
Arnhem
Nijmegen
NETHERLANDS
BELGIUM
LUXEMBOURG
GERMANY
Münster
Bielefeld
Paderborn
Karlshafen
Osterode
Kassel
Oberhausen
Gelsenkirchen
Dortmund
Essen
Bochum
Duisburg
Mülheim
Krefeld
Ürdingen
Hagen
Wuppertal
Düsseldorf
Mönchengladbach
Remscheid
Solingen
Roer River
Cologne
Aachen
Düren
Bonn
Rhine River
Koblenz
Malmedy
Stavelot
Bastogne
N
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20km
1
2
3
4
5
6
7
8
9
10
Jülich
Aldenhoven
Alsdorf
Bardenberg
GERMANY
Roer River
Birkesdorf
Eschweiler
Düren
Aachen
N
0
5 miles
0
5km

1. Alsdorf, October 8, 1944 (sPzAbt 506)
2. Bardenberg, October 11, 1944 (sPzAbt 506)
3. Jülich area, November 19–December 6, 1944 (sPzAbt 506, sPzAbt (FKL) 301)
4. Birkesdorf, December 12, 1944 (sPzAbt (FKL) 301)
5. Stavelot–La Gleize, December 17–22, 1944 (sSS-PzAbt 501)
6. Bastogne, December 21, 1944–January 15, 1945 (sPzAbt 506)
7. Düren–Elsdorf, February 26–27, 1945 (sPzAbt (FKL) 301)
8. Paderborn, March 29–30, 1945 (sPzAbt 507)
9. Bad Karlshafen, April 7, 1945 (sPzAbt 507)
10. Osterode, April 11, 1945 (sPzAbt 507)

The only Tiger I tanks to serve in the Ardennes campaign belonged to schwere Panzerkompanie *Hummel*, attached to sPzAbt 506 as a fourth company. This particular tank was found destroyed near Oberwampach, Luxembourg and is shown here with a forward observer team of the 358th Infantry Regiment (90th Division) on January 21, 1945.

Houffalize, the battalion had to torch over a dozen damaged Tiger tanks before retreating. The battalion commander, Major Eberhard Lange, was critical of the practice of 5. Panzerarmee in committing the battalion in a piecemeal fashion; but the 5. Panzerarmee commander, General der Panzertruppe Hasso von Manteuffel, was aggravated by sPzAbt 506's lackluster performance in the Ardennes and so relieved Lange of command in favor of Hauptmann Kurt Heiligenstadt.

## ZEBRA MISSION: THE PERSHING ARRIVES

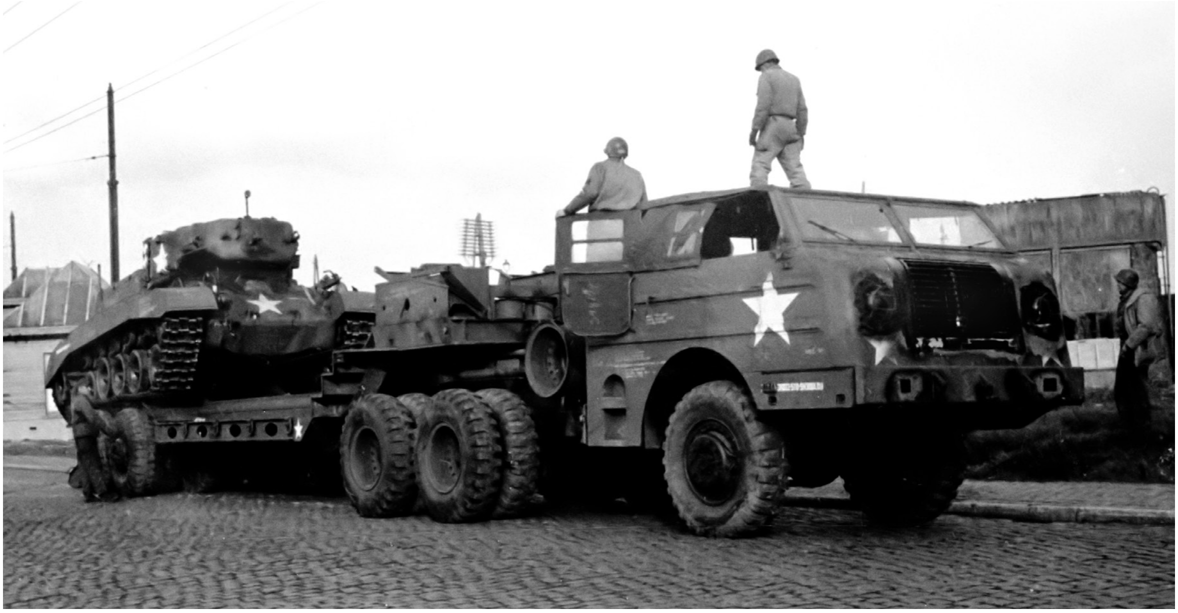
Maj Gen Gladeon Barnes' scheme to ship 20 new Pershing tanks to the ETO was expanded to include a variety of new Ordnance designs including a new 90mm antitank gun and new 155mm self-propelled guns. The expanded deployment was dubbed the Zebra Mission. Barnes himself decided to head the mission, and the various members of the technical team departed Washington, DC, for Paris on February 7–8, 1945. The mission came at an opportune time, since there was a growing uproar in the ETO over the inferior performance of the M4 medium tank in the face of the large numbers of Panther and Tiger tanks encountered in the Ardennes fighting. On arriving in Europe, the Zebra Mission was assigned to Gen Omar Bradley's 12th Army Group, which in turn directed them to the First US Army which was the only field army to encounter Tiger tanks in any number. The First US Army decided to deploy the first batch of new T26E3 tanks with the 3rd and 9th Armored divisions.

The new tanks were shipped from the docks at Antwerp to a maintenance yard near Aachen, arriving with the Zebra Mission personnel on February 17. The 3rd Armored Division had already dispatched ten complete tank crews, choosing its most experienced tank commanders. Also on hand were maintenance personnel to learn about the operation and repair of the new tanks. Most of the time was spent on gunnery training with the new 90mm gun. Each crew fired 28 rounds of 90mm ammunition for familiarization and to accustom them to the greater flash and smoke of the 90mm gun. Particular emphasis was placed on bore-sighting the guns to ensure their long-range accuracy. Conversion from the M4 medium tank to the Pershing was relatively straightforward since the gun fire controls, engine, and many subcomponents were similar or identical; the new transmission required more extensive training. The crash course was completed on February 23 and the new tanks and their crews were already deployed with the 3rd Armored Division on February 25 for Operation *Lumberjack*, another round of fighting on the approaches to the Roer. The 3rd Armored Division decided to scatter the T26E3 through both of its armored regiments, with 32nd and 33rd Armored regiments receiving five tanks each. These regiments each had three tank battalions, and the tanks were distributed to five separate tank companies for maximum exposure to the new type.

The second unit equipped, the 9th Armored Division, chose a different organizational arrangement. Unlike the 3rd Armored Division, which was organized under the old 1942 Tables of Organization and Equipment as a "heavy" division, the 9th Armored Division followed the 1943 tables and so had only three tank battalions instead of six. The five tanks issued to the 14th Tank Battalion were kept together in a Heavy Tank Platoon attached to Company A. The five tanks assigned to the 19th Tank Battalion were divided up in its three tank companies, with two tanks each going to Companies A and B, and one to Company C.

As a footnote to the Zebra Mission, it is worth mentioning that Maj Gen Barnes used his visit to the front lines to stir up interest in the ETO to deploy his pet project, the T23/M27 tank. Although Barnes claimed that he found officers eager to try out the new tank, Col George Dean, head of AGF's Armored Branch, found no commanders interested in receiving the tank in theater. Dean's report on the Zebra Mission ended any chance that the T23/M27 would be deployed in the ETO.

On arrival at the port of Antwerp in January 1945, the T26E3 tanks of the Zebra Mission were loaded on M25 tank transporters of the 559th Heavy Tank Maintenance Company for movement to Germany. This particular example uses the "soft-cab" M26A1 tractor instead of the more familiar armored M26 tractor.



# FRITZ BAYERLEIN

Generalleutnant Fritz Bayerlein was born in Würzburg, Bavaria, on January 14, 1899. He was drafted in June 1917 and was awarded the Iron Cross Second Class for holding off a British attack on August 30, 1918. After the war he remained in the Reichswehr, and was accepted as an officer in 1921. During the invasion of Poland in September 1939, Bayerlein served as a staff officer under Heinz Guderian and again served on the staff of Guderian's Panzergruppe 2 during Operation *Barbarossa* in 1941. After the battle of Kiev in the summer of 1941, Bayerlein was transferred to Generaloberst Erwin Rommel's staff as part of the build-up of the Deutsches Afrikakorps; he became chief-of-staff of the Deutsches Afrikakorps in August 1942. In October 1943, Bayerlein was assigned to lead 3. Panzer-Division on the Eastern Front. When the division was surrounded at Kirovograd in January 1944, Bayerlein led the breakout even though this had been forbidden by Hitler.

Bayerlein became part of the effort to rejuvenate the Wehrmacht in the West with experienced Eastern Front officers when he was assigned to lead the Panzer-Lehr-Division prior to D-Day. This division was largely destroyed by the US 2nd Armored Division during the Operation *Cobra* offensive in late July 1944. Many officers noted that Bayerlein suffered bouts of combat exhaustion following this experience. After the division was rebuilt in the autumn of 1944, Bayerlein again led it during the Ardennes offensive as part of 5. Panzerarmee in the fighting around Bastogne. In the wake of the failed Ardennes offensive, Bayerlein was put in charge of the improvised Korspgruppe *Bayerlein*, which consolidated the shattered remnants of several Panzer units under his command, including several Heer Tiger units. It was this formation that took part in the Roer fighting in February 1945, including the fighting for Elsdorf.

Bayerlein had considerable experience with the Tiger I in Tunisia, the Soviet Union, and France. He felt that it would have been desirable to include some in each Panzer regiment instead of deploying them in separate battalions. In contrast to his favorable impressions about the Tiger I, he later remarked that he thought the Tiger II had "an excellent gun and ample room for the crew [but] the motor was too weak, speed too low and it was excessively wide making it unsuitable for fighting in towns or forests and unsuitable on most roads, bridges and railways. It could not be recovered except by another Königstiger which would probably be damaged in the process because of its weak motor."

Bayerlein's improvised corps headquarters became the basis for LIII. Armeekorps, which he led for the remainder of the war. Bayerlein was captured by the US 7th Armored Division in the Ruhr Pocket on April 19, 1945. He died on January 30, 1970.

# MAURICE ROSE

Maurice Rose was born on November 26, 1899 and enlisted in the Colorado National Guard after graduating from high school in 1916, hoping to serve in the Mexican Punitive Expedition. He was only 16 at the time and so was dismissed from military service once his true age was determined. He eventually attended Officer Candidate School at Fort Riley, Kansas, and served with the 89th Division in France during 1918. He took part in the Meuse–Argonne Offensive and was wounded during the battle for Saint-Mihiel. He remained in the Army, attending the Command and General Staff College in 1937. Rose was one of a handful of senior American tank officers to serve in North Africa, Sicily, and the European Theater of Operations. He served as chief-of-staff for the 1st Armored Division during the Tunisian campaign in 1943. Rose's superior performance in Tunisia was duly noted and in May 1943 he was transferred to lead Combat Command A of 2nd Armored Division prior to its commitment to Operation *Husky*, the invasion of Sicily in July 1943. He remained in command of CCA during the campaign in France, most notably during the Operation *Cobra* breakthrough starting on July 25, 1944. CCA was instrumental in the destruction of the Panzer-Lehr-Division, and Generalleutnant Fritz Bayerlein narrowly escaped capture by Rose's men. Maj Gen "Lightning Joe" Collins, the VII Corps commander who executed Operation *Cobra*, was very disappointed with the performance of the neighboring 3rd Armored Division during the campaign, and relieved its commander in early August 1944. Familiar with Rose's exceptional leadership during the Normandy breakthrough, Collins picked Rose to take over command of the 3rd Armored Division.

The 3rd Armored Division fought in the battles along the Siegfried Line in the autumn of 1944, and was part of the counterattack force used to repel the German Ardennes offensive. Rose was in command of the 3rd Armored Division at the time of the fighting for Elsdorf covered in this book. The 3rd Armored Division had extensive contact with Tiger II tanks in the ensuing advance over the Rhine since it was on the path toward the Tiger's birthplace in Kassel. During the fighting for Paderborn on March 30, 1945, Rose was accompanying forward elements of the division when a Tiger II company from sPzAbt 507 ambushed the column in which Rose was traveling. In the dark, Rose ordered his jeep driver to try to escape, but while passing one of the Tiger II tanks, the jeep was pinned and Rose and his driver were captured. In the darkness and chaos, the German tank commander barked instructions to Rose in German. Thinking he was being instructed to disarm, Rose reached for his pistol holster. The nervous German tanker thought the motion was hostile, and shot and killed Rose.

Since Rose was the highest-ranking Jewish officer in the US Army in the ETO, there was some suspicion on the part of 3rd Armored Division troops that he had been deliberately killed. The Army ordered a formal inquiry which was led by a young lieutenant, Leon Jaworski, who would become famous decades later in the Watergate trials. The inquiry found that Rose had been killed in confused circumstances and had not been deliberately executed. Rose was the highest-ranking US Army officer killed by enemy action in the ETO; AGF chief Lt Gen Lesley McNair had been killed at the start of Operation *Cobra* but due to the falling short of US bombs, not German action.

# THE STRATEGIC SITUATION

Following the conclusion of the Battle of the Bulge in January 1945, the US Army's operational goal was to push over the Roer River to reach the Rhine. The start of the US Army offensive was delayed two weeks from February 10 to February 23 after the Wehrmacht breached the large Schwammenauel and Urft dams, flooding the Roer plains. Once the battlefield had sufficiently drained, the First US Army launched Operation *Lumberjack* with the aim of reaching the Rhine from Cologne to Remagen. The focus of this study is the skirmish for the town of Elsdorf, a road junction between the fortified city of Jülich on the Roer and Cologne on the Rhine. This was the combat debut of the Pershing and one of the last combat actions of the Tiger I in the West. Once the initial German defenses were breached by the infantry divisions, the 3rd Armored Division would be committed to exploit the breakthrough and reach the Rhine.

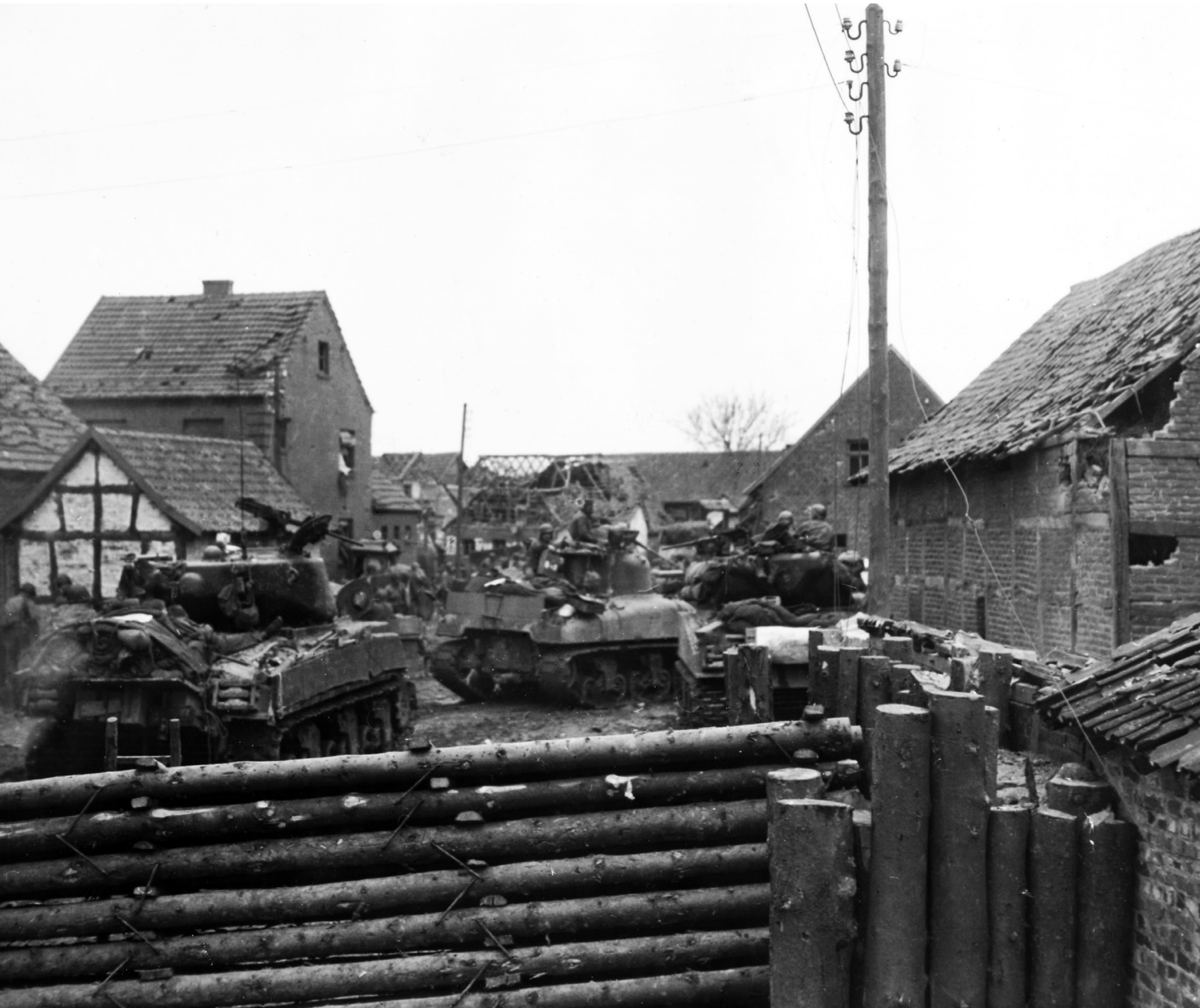
As was standard in US armored divisions, the 3rd Armored Division's tactical practice was to fight using combined-arms formations based around a brigade headquarters called a combat command, usually abbreviated CCA, CCB, and CCR (R = reserve). Each combat command generally had several tank battalions, infantry battalions, and field-artillery battalions plus supporting arms. There was no standard mixture and the composition was tailored to the mission. The combat commands in turn were further divided into task forces. These were typically based around a battalion of tanks and a battalion of infantry. In the case of the skirmish for Elsdorf, the American unit involved was Task Force Welborn, part of CCB, 3rd Armored Division. This formation was led by Col John Welborn, the commander of the

The US offensives over the Roer were delayed by the flooding caused by the breaching of the Roer dams. This is a view of the flooded farmlands near the Roer towns of Linnich and Brachelen on February 13, 1945.

33rd Armored Regiment. Task Force Welborn was broken down into three "battle groups": Battle Group Walson had I/33rd Armored and E/36th Armored Infantry; Battle Group McCam had A/33rd Armored and D/36th Armored Infantry; and Battle Group Blanchard had F/33rd Armored and F/36th Armored Infantry. To its east was Task Force Lovelady, commanded by Lt Col William Lovelady.

The principal German force opposing Operation *Lumberjack* was General der Infanterie Friederich Köchling's LXXXI. Armeekorps. 363. Volksgrenadier-Division held the Roer River defenses immediately south of Jülich while 12. Volksgrenadier-Division held the sector as far south as Düren. 363. Volksgrenadier-Division was evaluated by Köchling at a combat value of 2 on a scale of 1 to 4. This rating meant that it was suitable for offensive action due to good divisional leadership even though the combat strength of its rifle battalions was only average, about 200 men each. It had a divisional combat strength of 4,600 men. The division had an organic battalion with 12 Jagdpanzer 38 Hetzer tank destroyers. The neighboring 12. Volksgrenadier-Division was one of the workhorses of the Wehrmacht on the Western Front and had distinguished itself during the fighting for Aachen in the autumn of 1944. It had been partially replenished after the Ardennes fighting and was rated at a combat value of 2 with a combat strength of 3,000–4,000, but was weak in armored support with only eight StuG III assault guns.

Köchling's strongest formation was Korpsgruppe *Bayerlein*, which was an amalgamation of the battered leftovers of the Panzer units from the Ardennes fighting. It was led by the former commander of the Panzer-Lehr-Division, Generalleutnant Fritz Bayerlein. The principal components were 9. Panzer-Division and 11. Panzer-Division, with the attached Tigers of sPzAbt 506 and sPzAbt (FKL) 301, as well as the assault guns of StuG-Brigade 341. 9. Panzer-Division was split up, with about two-thirds of its strength committed in the neighboring LVIII. Panzerkorps sector, and the remainder of its strength under Bayerlein's command, including Panzergrenadier-Regiment 10, Panzer-Aufklärungs-Abteilung 9, and an assortment of tank companies from Panzer-Regiment 33. 3. Panzergrenadier-Division was in corps reserve. On February 21, days before the start of the American offensive, Bayerlein had supervised a map exercise at 9. Panzer-Division headquarters in Bolheim to consider the best approach to dealing with a likely American armored thrust from Düren to the Erft River, precisely the intended approach of 3rd Armored Division.



Most towns on the approaches to the Rhine had their streets blocked with *Panzersperren*, a type of log obstruction created as part of the *Weststellung* fortification program. T26E3 "Fireball" was positioned behind one of these on the night it was knocked out. This is a scene inside the neighboring village of Manheim, southeast of Elsdorf, which was captured on February 25, 1945 by Task Force Kane, CCA, and the 83rd Armored Reconnaissance Battalion, 3rd Armored Division. The tank on the left is an M4A3E2 assault tank.

The terrain on the Cologne Plain was flat and well-suited to antitank defense. This is an 8.8cm PaK 43/3 antitank gun on an SkL IIa pedestal mount, part of the Pakriegel Düren antitank gun belt between the Roer and Rhine rivers. This particular gun was situated on the elevated ground along the Erft Canal facing west toward Elsdorf.

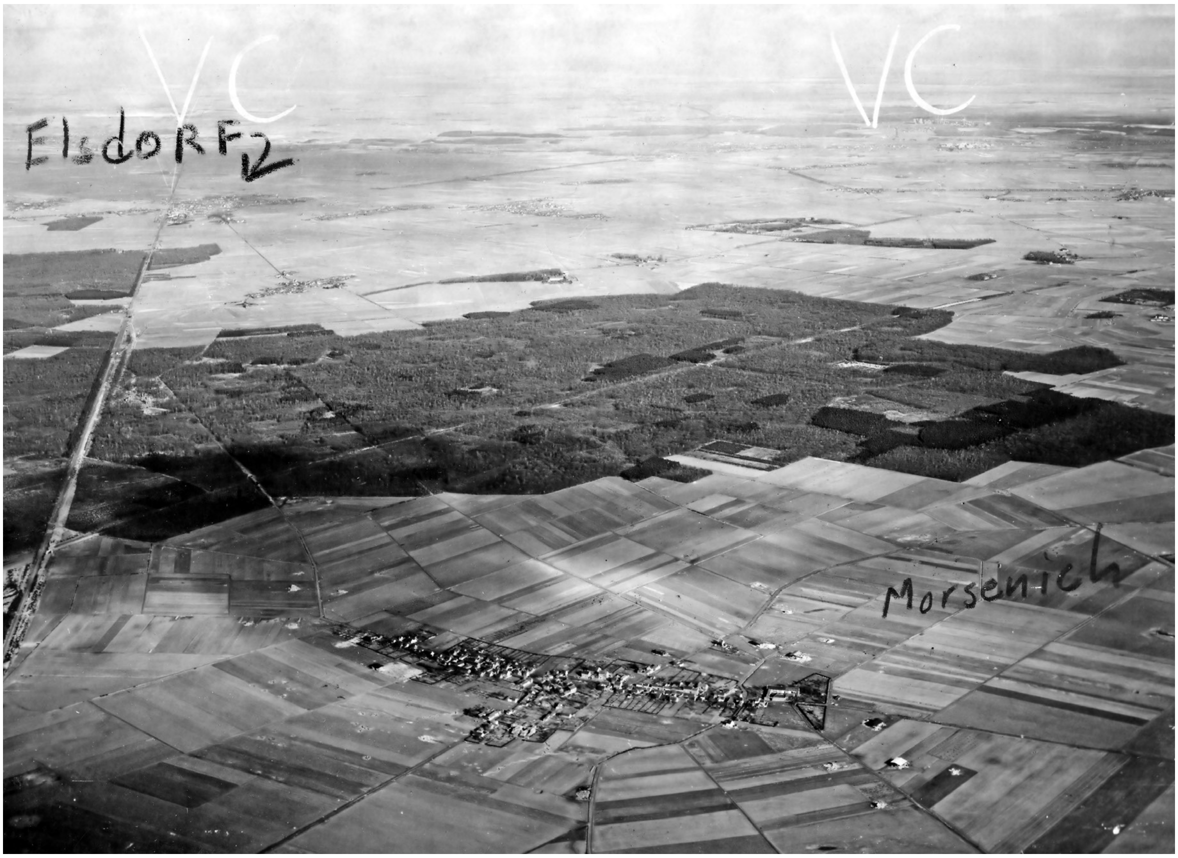
At the start of Operation *Lumberjack*, sPzAbt (FKL) 301 had 19 Tiger I tanks and a similar number of Borgward B IV demolition vehicles available; the B IV were not used in this operation so far as is known. Eight Tigers under Leutnant Schreiner of 3./sPzAbt (FKL) 301 were ordered from their base at Kirchherten southward toward Lich. The remaining 11 Tigers from 1./ and 2./sPzAbt (FKL) 301 were placed under 9. Panzer-Division command and sent toward Jülich under Oberleutnant Endeman. This was familiar ground for the battalion, which had fought in this sector in late November 1944 as previously described.

**Korpsgruppe *Bayerlein* operational tank strength, February 1, 1945**

| | PzKpfw IV | Panzer IV/70 | Panther | Tiger I | Tiger II | StuG |
|---|---|---|---|---|---|---|
| 9. Panzer-Division | 6 | 10 | 5 | | | 5 |
| 11. Panzer-Division | 10 | | 32 | | | 7 |
| sPzAbt 506 | | | | | 18 | |
| StuG-Brigade 341 | | | | | | 18 |
| sPzAbt (FKL) 301 | | | | 19 | | |

Owing to the exhausted state of the Heer after the Ardennes offensive, the Wehrmacht engaged in an extensive fortification effort along the Roer as part of the larger *Weststellung* (Western Position) program (see Zaloga 2011). Because of the suitability of the Cologne Plain for mechanized advance, the special Pakriegel Düren (Düren antitank belt) was created in January–February 1945 by Heer engineers. The terrain in this sector was extremely flat, so a single antitank gun could cover a wide swath of territory. The antitank gun belt was based around 108 pedestal-mounted antitank guns stretching about 70km from Erkelenz to Euskirchen, reinforced with 7.5cm PaK 40 towed antitank guns. The principal weapons in the belt were 8.8cm PaK 43/3 guns that were surplus from the Tiger II and Jagdpanther programs, mounted on Sockellafette IIa (Skl IIa) pedestals. The pedestal guns were bolted to concrete platforms in earthen entrenchments so that only their barrels were above ground level. These defenses were manned by special antitank units called *Festungs-PaK-Verbände* (fortified antitank units). These battalions typically had five companies each with nine 8.8cm pedestal guns and ten 7.5cm PaK 40 towed antitank guns; there were 30 of these battalions in the *Weststellung*. The Pakriegel was used to form the spine of the infantry defense works along the Roer to the west of Cologne. Extensive trench works, strongpoints, and other defenses were added to reinforce the antitank guns. Due to the proximity of major cities such as Cologne, there were extensive antiaircraft gun deployments to defend against the Allied strategic bombing campaign. These were reinforced for use in a ground-defense role and issued armor-piercing ammunition.

An aerial photograph used by staff of CCB, 3rd Armored Division to plan the attack on Elsdorf during Operation *Lumberjack*. Task Force Welborn moved on Elsdorf via the railroad tracks evident on the left side of the photo while Task Force Lovelady moved up through the eastern portion of the Elsdorfer Bürge woods on the right side of the photo.



# COMBAT

Operation *Lumberjack* began at 0330hrs on February 23, 1945 after the Roer flooding had finally subsided. The Roer was swollen and wide, obliging the Americans to use assault boats. The main focus of the river assault was the city of Düren, with elements of the 8th and 104th divisions landing on either side. This sector was held by 12. Volksgrenadier-Division. Resistance was weak and the 15. Armee commander noted that "in comparison with its earlier achievements, the 12. Volksgrenadier Division had very much disappointed our headquarters during its initial defensive battle." The main threat was the German artillery, which made life very difficult for the US engineers trying to erect vehicular bridges over the river. The fire was heavy enough that no bridges were erected on February 23. However, both US divisions had established sizable infantry bridgeheads on the east bank of the Roer using assault boats and suffered only modest casualties due to the weak German infantry response.

On the evening of February 23, Heeresgruppe B commander Generalfeldmarschall Walther Model met with senior commanders at Köchling's LXXXI. Armeekorps headquarters at Rath. Bayerlein later recalled:

> He reproached the commanders bitterly, because he believed that the strong (Pakriegel) defense line had been favored by the terrain and should have held under all circumstances. He demanded that the bridgeheads of the enemy be eliminated in the morning of 24 February. Model was still of the opinion that possible armored attacks by the enemy from the bridgeheads through the Pakriegel Düren would fail. Therefore, he refrained from committing the entire Korps Bayerlein.

The second day of the offensive went no better for Köchling's troops. The 8th and 104th divisions cleared out the city of Düren and began to push out toward the

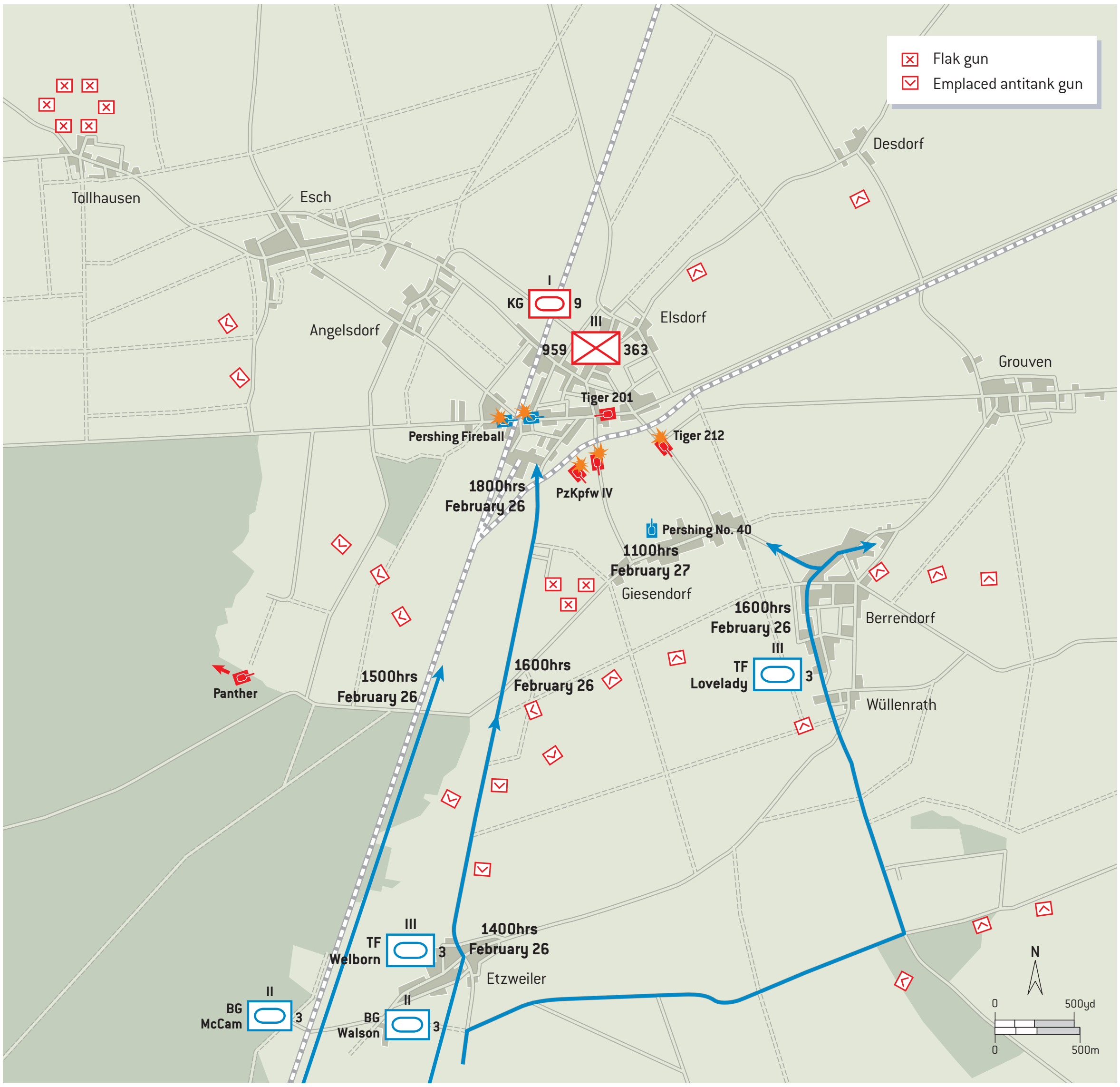
Cologne Plain. Model and Köchling's main concern was the situation farther north around Jülich, and Bayerlein's Panzer force began to be committed in that sector. The commander of the 3rd Armored Division, Maj Gen Maurice Rose, was ordered to start moving the 3rd Armored Division across the vehicle bridges over the Roer on February 24, through Düren, setting the stage for an armored clash.

Task Force Welborn moved out of Stolberg toward Düren in the dark. The 33rd Armored Regiment had been issued five T26E3 tanks of which two were with Task Force Welborn: Serial No. 38 in Co. F and No. 37 in Co. I. The neighboring Task Force Lovelady had one T26E3, No. 40, in Co. E. By 0530hrs on February 26, Task Force Welborn was ready to attack, with Task Force Lovelady advancing on its right, farther to the east. The main source of delay was the waterlogged terrain rather than German resistance. Many tanks got stuck in the mud and it took until 0930hrs for the task force to push out of the suburbs of Düren and on to the southern edge of forested Elsdorfer Bürge. Task Force Welborn split in two: Battle Group McCam with its infantry riding on M5A1 light tanks proceeded on the railroad tracks and neighboring embankment while the two medium-tank companies of Battle Group Walson moved cross-country on the east side of the track with their infantry moving dismounted along the forest edge. Aside from sporadic German small-arms fire, the advance was uncontested and delayed by the soggy ground conditions. Most of the many antitank guns of Pakriegel Düren in this sector had been knocked out by preliminary artillery fire or abandoned by their crews. Task Force Lovelady veered to the east and captured the connected villages of Wüllenrath and Berrendorf.

On reaching the village of Etzweiler in the early afternoon, Battle Group Walson attacked the town, taking about 100–150 prisoners and evacuating about 250 civilians. At 1600hrs, Col Welborn ordered an attack on Elsdorf itself with Battle Group Walson in the lead. On arriving at the southern edge of Elsdorf, Walson's group, consisting of I/33rd Armored and E/36th Armored Infantry, cleared out about 15 houses at the southern end of the town before nightfall. Up to this point, Task Force Welborn had mainly faced small-arms fire, but it was becoming evident that the town would be defended. The civilian population had previously been evacuated by German authorities aside from an undetermined number of Volkssturm militiamen, many armed with *Panzerfaust* antitank rockets. As was the usual practice along the *Weststellung*, all major roads through the town were blocked by *Panzersperren*, a type of antitank barrier made from logs. The main force defending Elsdorf came from troops of Grenadier-Regiment 959 and Artillerie-Regiment 363 of 363. Volksgrenadier-Division. This infantry regiment had been stationed along the Roer River between Jülich and Düren and had been routed on February 23–24. Assorted troops of Grenadier-Regiment 959 that had retreated into Elsdorf were its only defense aside from halfhearted Volkssturm militia.

## DUEL IN ELSDORF

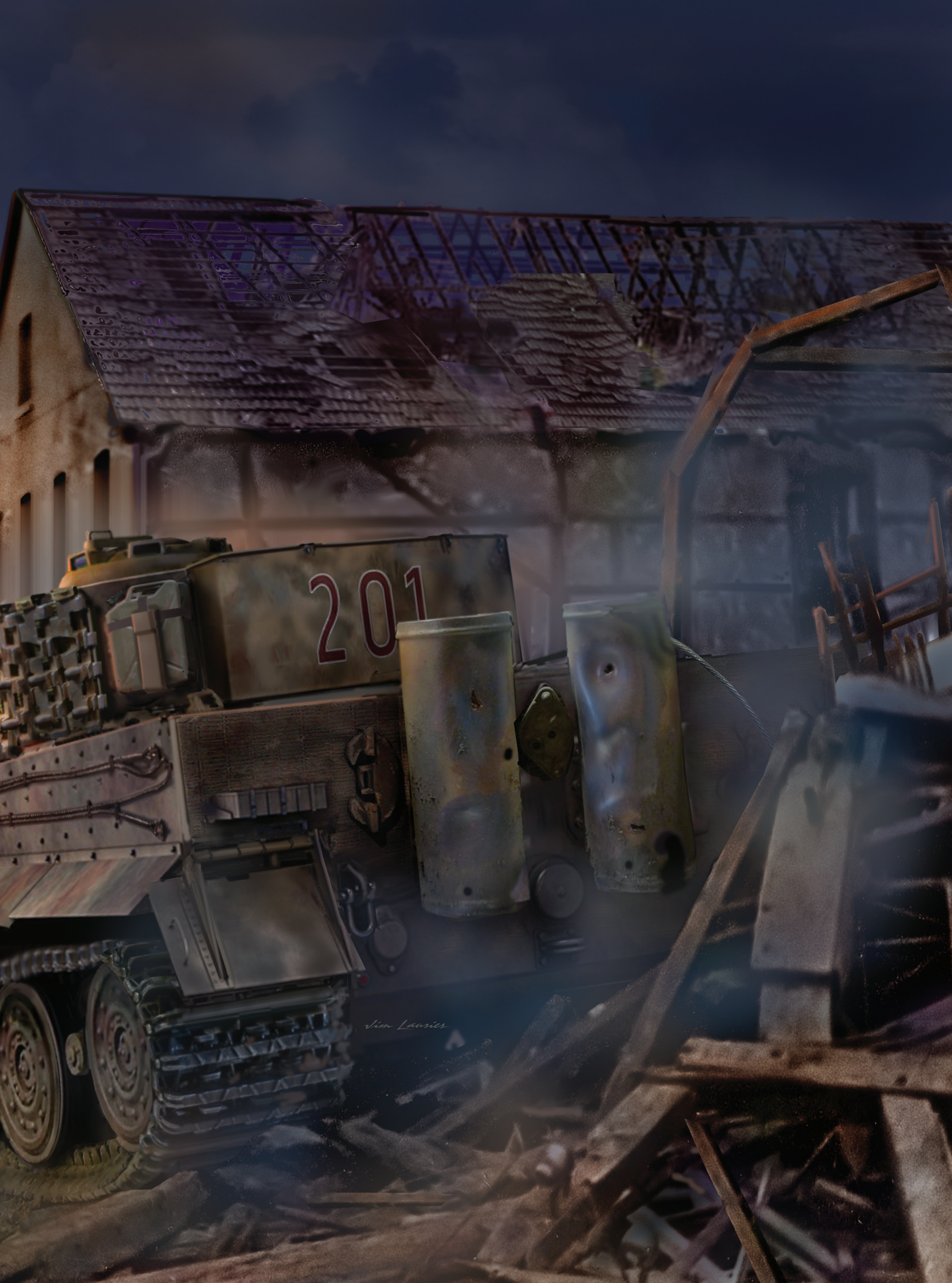
The arrival of Task Force Welborn in Elsdorf was reported to Bayerlein. This was not unexpected since the town was on the main road to Cologne and was a significant rail junction. Bayerlein ordered a small *Kampfgruppe* from 9. Panzer-Division toward the


Flak gun
Emplaced antitank gun
Desdorf
Tollhausen
Esch
Angelsdorf
KG
I
9
III
959
363
Elsdorf
Grouven
Tiger 201
Pershing Fireball
Tiger 212
1800hrs
February 26
PzKpfw IV
Pershing No. 40
1100hrs
February 27
Giesendorf
Berrendorf
1600hrs
February 26
III
TF
Lovelady
3
Wüllenrath
1500hrs
February 26
Panther
1600hrs
February 26
III
TF
Welborn
3
1400hrs
February 26
Etzweiler
II
BG
McCam
3
II
BG
Walson
3
N
0
500yd
0
500m

Tank duel at Elsdorf, February 26–27, 1945.

town. This included at least three Tiger I tanks of sPzAbt (FKL) 301 and several PzKpfw IV tanks from Panzer-Regiment 33. US reports estimated there were 10–15 German tanks in and around the town. The Tigers arrived in the town after dark and were informed by the *Grenadiere* that there were American tanks at the southern edge of the town near the railroad tracks.

One Tiger I, Nr. 201, moved down Köln-Aachener Straße where its crew could hear the sound of tank motors ahead. The tactical number suggests that it was the tank of the commander of 2./sPzAbt (FKL) 301. Two tanks from F/33rd Armored, an M4 and the T26E3 named "Fireball," pulled up behind one of the *Panzersperren* on the main street near the railroad crossing. Around 2100hrs, the M4 was set ablaze, either by a *Panzerfaust* or German artillery fire. This fire silhouetted the turret of "Fireball" and exposed it to Tiger I Nr. 201, which at this stage was only 100yd away. The Tiger I


201
Jim Laurier

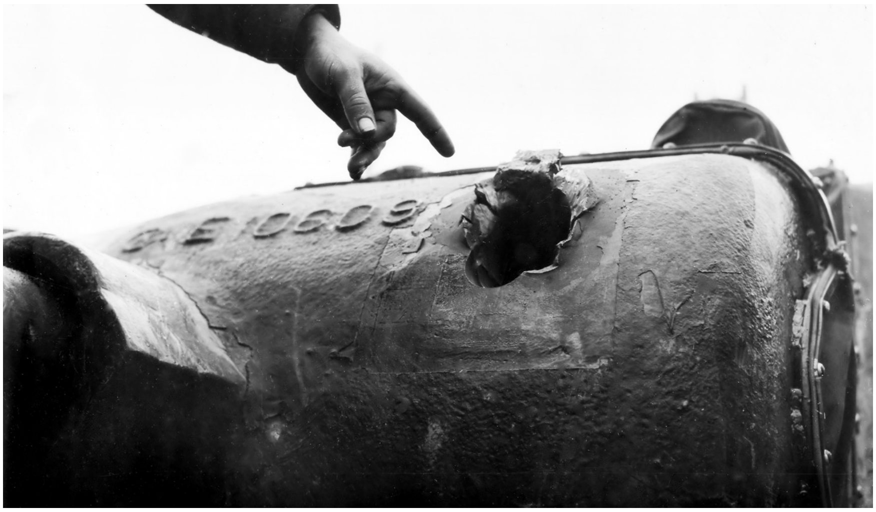
**PREVIOUS PAGES**
During the evening of 26 February 1945, Tiger I Nr. 201 of sPzAbt (FKL) 301 moved down Köln-Aachener Straße in Elsdorf to confront the approaching tanks of Task Force Welborn of the 3rd Armored Division. Around 2100hrs, an M4 tank was set ablaze, either by a *Panzerfaust* or German artillery fire. This fire silhouetted the turret of T26E3 "Fireball" that was partially hidden by a street barrier. The Tiger fired three shots in rapid succession from a range of about 100m. The first shot penetrated through the coaxial machine-gun opening in the gun mantlet, killing the Pershing's gunner and loader. The second 8.8cm round hit the muzzle brake of "Fireball," jamming the barrel and causing the 90mm round to detonate prematurely in the tube. The third 8.8cm round glanced off the upper corner of the mantlet of "Fireball." Moments later, Tiger I Nr. 201 became immobilized in the rubble of house No. 74 when it tried to reverse back down the street. The crew abandoned the Tiger I and it was recovered by US troops the following morning.

fired three shots in rapid succession. The first shot was lucky and penetrated through the coaxial machine-gun opening in the gun mantlet, killing gunner Cpl John McGraw and loader Pfc Francis Rigdon. Rigdon had chambered a 90mm round in the breech, and the second 8.8cm round hit the muzzle brake of "Fireball," jamming the barrel and causing the 90mm round to detonate prematurely in the tube. The third 8.8cm round glanced off the upper corner of the mantlet of "Fireball," and ricocheted into the commander's hatch, ripping it off.

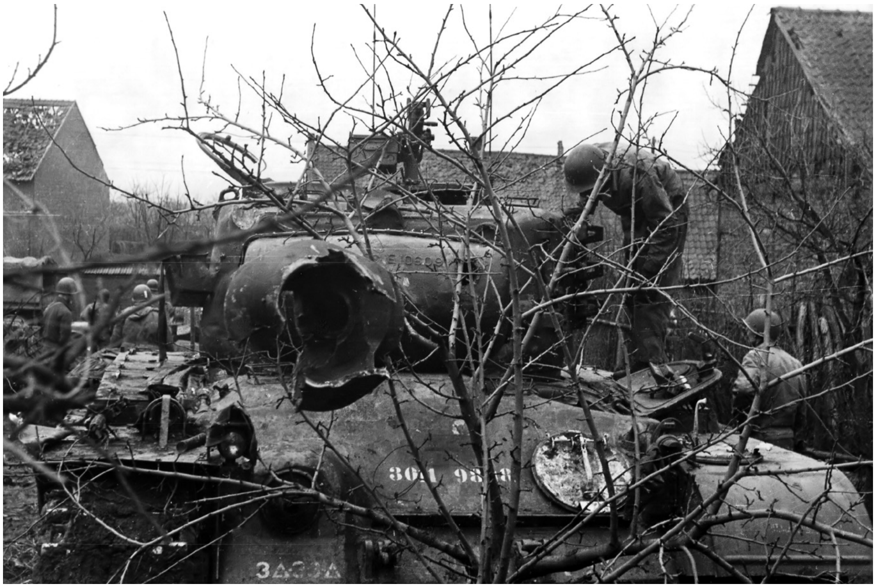
Tiger I Nr. 201 then attempted to reverse back down the street, but ended up driving into the rubble of house No. 74 on Köln-Aachener Straße. The Tiger I became trapped by the rubble and the driver was unable to extract it from the debris. The crew abandoned the tank, expecting to be overrun by American infantry. The commotion led to a bombardment of the area by the 391st Armored Field Artillery Battalion which was supporting CCB. "Fireball" was later recovered and repaired, returning to action on March 7.

Owing to the congestion in Elsdorf caused by the *Panzersperren* and rubble, Col Welborn decided to use available infantry to clear the town the following day. Early on the morning of February 27, Task Force Lovelady was subordinated to Welborn's command to coordinate the attack. Around dawn, the US infantry began clearing Elsdorf. Around 0900hrs, Task Force Lovelady held a conference of the infantry and tank-company commanders in the neighboring village of Giesendorf. An artillery round struck the house, killing both company commanders and stunning Lt Col Lovelady. This delayed the start of the tank attack until 1030hrs. In the meantime, four German tanks began to be pushed out of the southern edge of Elsdorf by advancing infantry from Task Force Welborn. Some tanks from Task Force Lovelady had begun moving forward out of Giesendorf toward Elsdorf, and came under fire from one of these tanks, a Tiger I, Nr. 212, of sPzAbt (FKL) 301 near a house on Jackerather Straße. E/33rd Armored lost two tanks on this day, but it is unclear from the unit reports whether it was during this initial encounter with the Tiger I.

The US task force commander turned to the commander of his single T26E3 to deal with the problem. Sgt Nicholas Mashlonik was the commander of T26E3 No. 40.



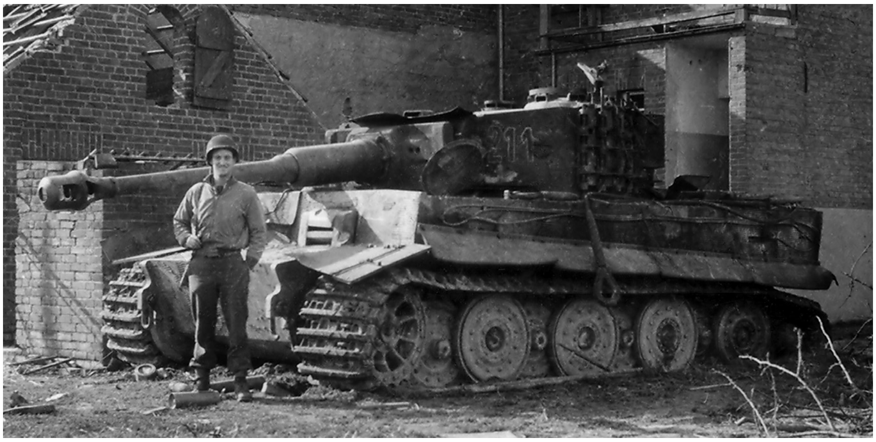
The fatal strike on "Fireball" was this penetration through the upper lip of the aperture for the coaxial machine gun on the left side of the gun mantlet, killing two crewmen inside the turret.



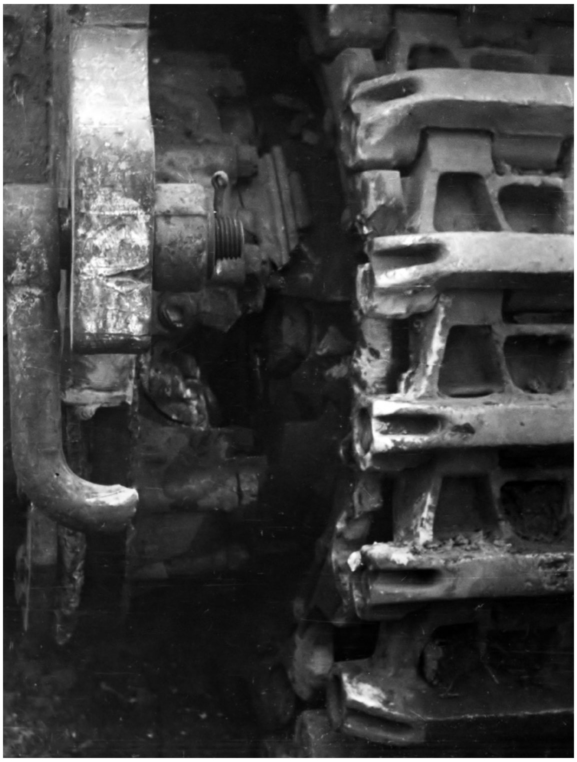
The Tiger's second 8.8cm projectile hit the muzzle brake of "Fireball," splitting it open, and detonating the loaded 90mm round in the barrel. This gun was removed and replaced with a spare barrel from an M36 90mm GMC tank destroyer.

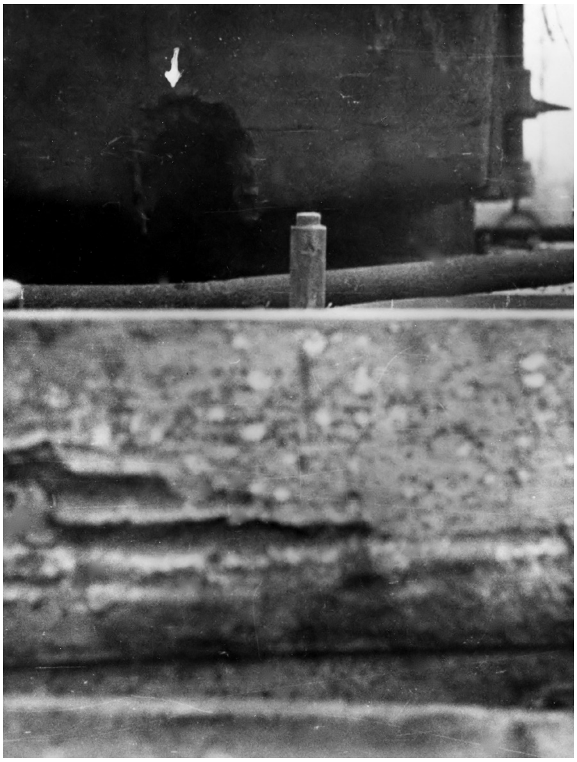
He had been selected to command the company's first T26E3 since he was the most experienced tank commander in the company, credited with knocking out 12 German tanks and surviving the loss of seven of his own M4 tanks since Normandy. Mashlonik later recalled:

> The company commander and I did some investigating. By crawling out to a position where we could see from ground level, it was a sight to behold. The German Tiger was slightly dug in and this meant it would be more difficult to destroy. I decided that I could take this Tiger with my 90mm. Our M26 was in defilade position, more or less hidden in a little valley. I detailed my driver (T/5 Ernest) Cade and gunner (Cpl Carl) Gormick to accompany me on this mission. I would be gunner and have Gormick load. I instructed both of them that once we had fired three shots – two armor piercing and one HE point detonating – we would immediately back up so as not to expose ourselves too long on the top of the hill. Just as we started our tank and moved very slowly creeping forward,



This Tiger I of 2./sPzAbt (FKL) 301 was knocked out by Sgt Nicholas Mashlonik's Pershing tank near a building on Jackerather Straße on the morning of February 27, 1945.





**ABOVE LEFT**

Mashlonik's first hit, using a "souped up" round of T30E16 HVAP, immobilized the Tiger I when it struck the junction of the front left hull and the cover over the final drive.

**ABOVE RIGHT**

Mashlonik's second hit with a T33 projectile clipped the lower left edge of the gun mantlet, sending the projectile through the turret race and into the turret interior where it started a fire that engulfed the tank. The third strike by a high-explosive projectile struck immediately below this against the armored cover over the driver's visor, and was intended to kill the escaping crew. Experienced US tankers like Mashlonik usually followed their armor-piercing ammunition with a round or two of high explosive both to kill the crew and to set the tank on fire.

> I noticed that the German Tiger was moving out of the position and exposed his belly to us. I immediately put a shell into its belly and knocked it out. The second shot was fired at his track and knocked his right track off. The third shot was fired at the turret with HE point detonating and destroyed the escaping crew.
>
> At the time three other German armored vehicles were leaving Elsdorf and were on the road driving to my right flank. I waited until all of them were on the road with their rear ends exposed and then I picked off each one with one shell each getting the last one first, then the second one and then the first one – just like shooting ducks. Then I came back to each vehicle with HE point detonating and destroyed the crews as they were dismounting from the burning vehicles. It was our first day in combat with the Pershing and it was both fruitful and exciting.

From a range of about 1,000yd, Mashlonik's first round, a "souped-up" T30E16 HVAP, struck the Tiger I in the lower left bow, smashing the transmission and final drive and halting the German tank. In contrast to Mashlonik's postwar recollections cited above, the contemporary after-action report indicates that the second round was a T33 AP round which clipped the lower edge of the gun mantlet, penetrated the turret, and started the tank on fire. As the crew tried to escape, Mashlonik fired two more rounds of M71 high explosive, one of which detonated against the armored cover over the driver's visor.

Mashlonik then fired at three PzKpfw IV Ausf J of Panzer-Regiment 33 (9. Panzer-Division) that were operating slightly to the west of the Tiger I. Two were hit first with a T33 projectile, followed by two M71 high-explosive rounds to kill the escaping

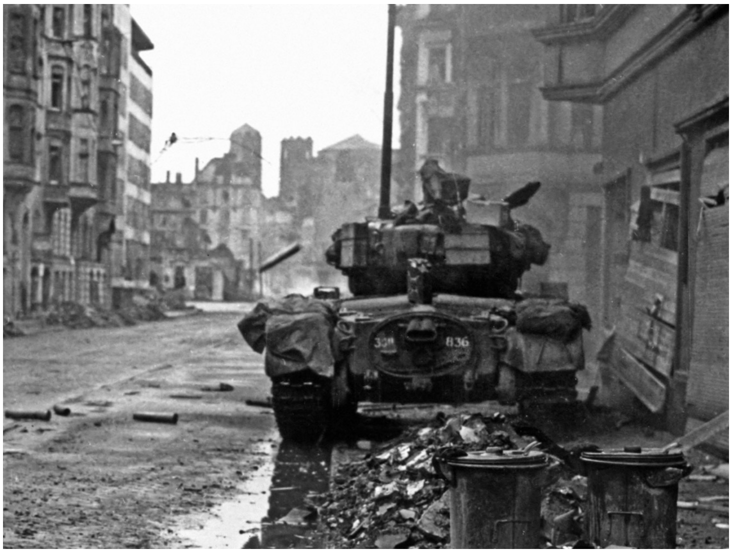
A portrait of the crew of T26E3 No. 40 of E/33rd Armored, sometimes dubbed "Fireball's Avenger," commanded by Sgt Nicholas Mashlonik (second from left) and including Cpl Carl Gormick (gunner), T/5 Ernest Cade (driver), Pfc Ralph Ruiz (loader), and Pfc Walter Bozenko (assistant driver).

crews and set the tanks on fire. The fate of the fourth German tank was not recorded and the after-action report that day credited Mashlonik with three tanks, not four. Mashlonik's crew knocked out another PzKpfw IV a few days later during the advance on Cologne, making his tank the highest-scoring Pershing in the ETO. The remaining German tanks in Elsdorf retreated as American infantry swarmed through the town in the late morning.

After the capture of Elsdorf, Task Force Lovelady continued toward Cologne, and on March 3 knocked out two self-propelled guns and a PzKpfw IV, the latter perhaps being the tank credited to Mashlonik. The task force encountered the Tigers of sPzAbt (FKL) 301 again on March 4 when two of the heavy tanks supported a German infantry counterattack near Roggendorf; one Tiger was knocked out.

## THE PERSHING ACROSS THE RHINE

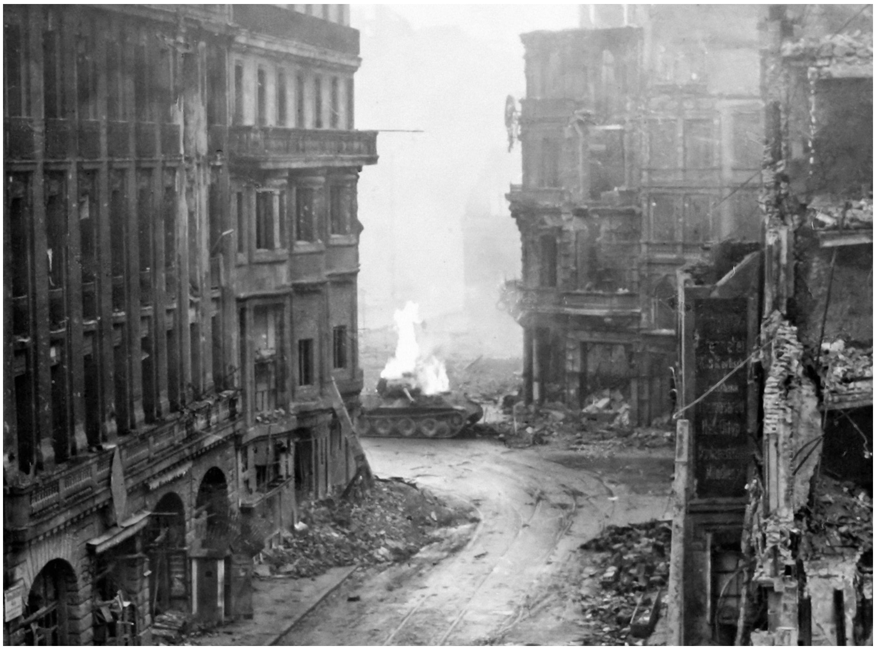
The only Pershing tank knocked out and written off during World War II was No. 25, serving with H/33rd Armored in Task Force Hogan. It was hit shortly before dawn, at 0530hrs, on March 6, 1945 outside the village of Glesch near the Erft Canal. A Nashorn 8.8cm tank destroyer, probably from 2./sPzJgAbt 93, hit it from point-blank range of only 300yd, with the projectile penetrating the lower bow and starting a turret fire. The crew abandoned the tank, and about ten minutes later, the ammunition ignited, incinerating the turret and front hull. An Ordnance team determined that the engine compartment was still intact but that recovery would be time consuming. As a result, No. 25 was written off and the hulk cannibalized to support the other 19 Pershings. None of the other eight Pershings in the 3rd Armored Division was knocked out in combat, though two broke down with powertrain problems.



Sgt Robert Early's T26E3 No. 26 viewed from the rear while parked on An den Dominikanern moments after it fired its third shot against Oberleutnant Wilhelm Bartelborth's Panther in front of Cologne Cathedral. The spent casing can be seen flying out of the left-side turret port.

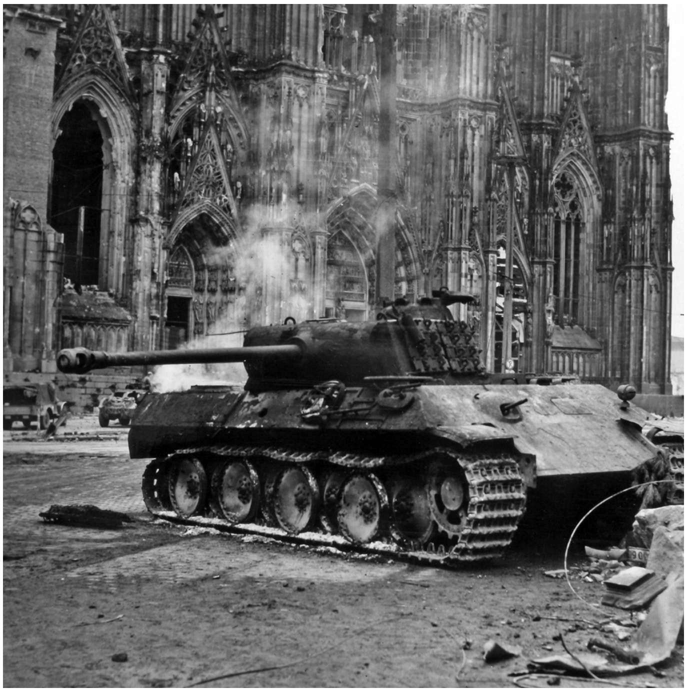
Probably the most famous tank duel fought by the Pershings of the 3rd Armored Division occurred on March 6 after Task Force Doan (CCA) entered Cologne. A pair of tanks from F/32nd Armored advanced toward the plaza of Cologne Cathedral along KomödienStraße, but were blocked by rubble. The Panther tank of Oberleutnant Wilhelm Bartelborth, the commander of 2. Zug, PzAbt 2106 (Panzer-Brigade 106 *Feldherrnhalle*), was hidden in a building behind the cathedral, and fired at the M4A3 tank commanded by Sgt Kellner, setting it on fire and killing several of the crew.

In the meantime, T26E3 No. 26 commanded by Sgt Robert Early of E/32nd Armored was moving down an adjoining street toward the cathedral. Early was instructed by the company commander to knock out the Panther. He dismounted from his tank, and ran up to the corner of the Deutsche Arbeitsfront (German Labor Front) building facing the cathedral plaza to see where the Panther was located. In the meantime, Bartelborth had moved his Panther tank forward into the cathedral plaza near MarzellenStraße to control the several streets leading into the plaza. Sgt Early returned to his tank on An den Dominikanern, and instructed his crew on his plan. His gunner, Cpl Clarence Smoyer, recounted the duel:



A view down MarzellenStraße from the upper floors of the Deutsche Arbeitsfront (German Labor Front) building looking toward the cathedral plaza. This photo was taken by Signal Corps cameraman Jim Bates who had accompanied Sgt Early to locate the Panther. This image was taken seconds after the survivors of Bartelborth's Panther had escaped and the ammunition had ignited inside the tank.

> We were told to just move into the intersection far enough to fire into the side of the enemy tank, which had its gun facing up the other street. However, as we entered the intersection, our driver had his periscope turned toward the Panther and saw their gun turning to meet us. When I turned our turret, I was looking into the Panther's gun tube; so instead of stopping to fire, our driver drove into the middle of the intersection so we wouldn't be a sitting target. As we were moving, I fired once. Then we stopped and I fired two more shells to make sure they wouldn't fire at our side. All three of our shells penetrated, one under the gun shield and two on the side. The two side hits went completely through and out the other side.



Bartelborth's Panther Ausf A of Panzer-Brigade 106 *Feldherrnhalle* was still smoldering a day after its duel with Sgt Early's Pershing on the plaza in front of Cologne Cathedral. The three hits ignited the ammunition, incinerating the tank including the rubber wheel rims.

Although the stationary Panther should have had the edge in such a duel, Bartelborth later recalled that he was expecting to see another M4 medium tank, and when the Pershing appeared, it confused him. For a moment, he thought it might be another German tank. In that split second, Smoyer fired first, using a T33 round followed by another T33 and a T30E16 round. Three crewman escaped the burning Panther, though one died shortly after.

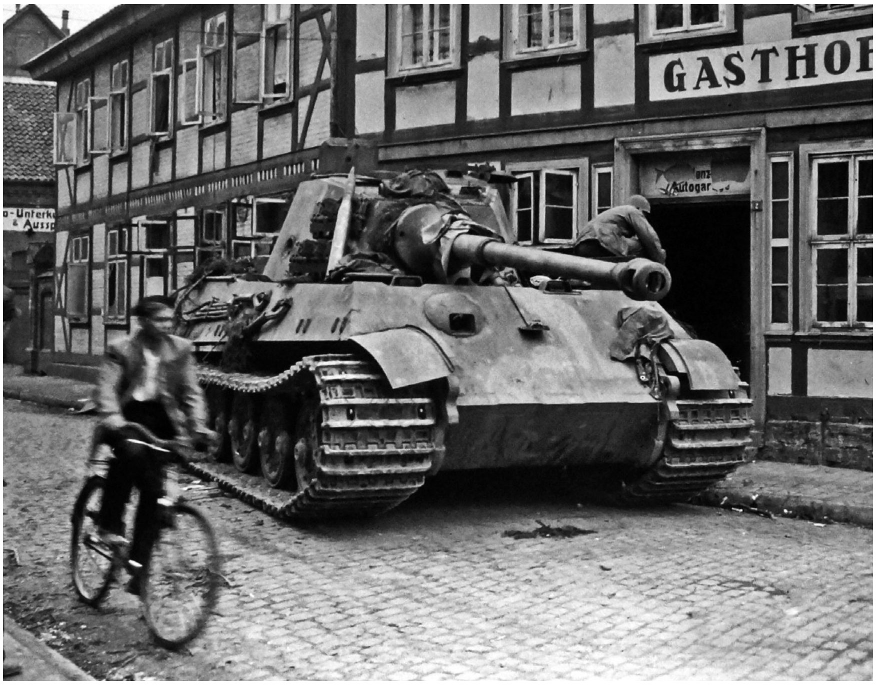
The crew of T26E3 No. 26 in Cologne on March 6, 1945 shortly after its duel with the Panther in front of the cathedral. From left to right they are assistant driver Homer Davis, tank commander Sgt Robert Early, gunner Cpl Clarence Smoyer, driver William McVey, and loader John Deriggi.

# INTO THE TIGER'S LAIR

The other batch of ten T26E3 Pershings went to the 9th Armored Division. Their most famous action came on March 7 when the Heavy Tank Platoon, Co. A, 14th Tank Battalion (9th Armored Division) took part in the capture of the Ludendorff Bridge over the Rhine at Remagen. This unexpected windfall altered Allied plans for the final endgame against Germany.

On March 24, Bradley's 12th Army Group launched Operation *Voyage*, exploiting the Remagen bridgehead and initiating the encirclement of the Ruhr Pocket. This triggered the last major encounter between US tanks and German Tigers. The main Tiger plant at Kassel was in this area, but production had already halted that month. The improvised SS-Ersatz-Panzer-Brigade *Westfalen* was created using the staff and students of the Waffen-SS armor and armored reconnaissance training camp at nearby Sennelager. Its main tank element was sPzAbt 507, a Tiger II-equipped unit that had recently arrived in the area to rebuild after its decimation on the Eastern Front. It had received 21 Tiger II tanks in the days before the battle of Paderborn, partially equipping 2./ and 3./sPzAbt 507.

Opposing this improvised brigade was the 3rd Armored Division. In an ambush on the evening of March 29, Task Force Welborn lost 17 M4 tanks and many other vehicles. Seven Tiger II tanks of 3./sPzAbt 507 saw the US column in the dwindling evening light. This incident was the single biggest victory of the Tiger II tank in the ETO. The Tiger II tanks knocked out the lead first and last tanks, and once the rest of the column was trapped, they systematically destroyed the remainder. The next day, 2./sPzAbt 507 was ambushed by Task Force Welborn and lost three Tiger II tanks.



The last documented encounter by the US Army with Tiger II tanks was at Osterode in the Harz Mountains on April 11, 1945 when sPzAbt 507 lost its last two Tiger II tanks. The circumstances of the loss of this particular tank are unclear, though there have been suggestions that it was a victim of fratricide and the tank towed back to Osterode, where it was abandoned. There is a large penetration visible on the turret side.

A rare color photo of a T26E3 of the 3rd Armored Division during the fighting in the Harz Mountains on April 18, 1945.

Fighting continued through April 2, when sPzAbt 507 lost five more Tiger II tanks, claiming five US tanks in return. The role of the T26E3 Pershing tanks of the 3rd Armored Division during these encounters is not detailed in unit records.

The surviving tanks of sPzAbt 507 retreated toward the Harz Mountains during the first week of April 1945, but nearly all of the tanks were lost in a series of rearguard actions against US forces. On April 9, a 3rd Armored Division unit encountered several Tiger II tanks north of Göttingen. One of the M4 (75mm) tanks engaged the Tiger II tanks with white-phosphorus smoke rounds since the commander knew full well that his 75mm gun could not penetrate the front armor of the Tiger II. These rounds emitted a toxic smoke that was sucked into the fighting compartment by the Tiger II's ventilation fans, causing the crew to abandon two of the tanks. The last two Tiger II tanks were lost in combat against the 1st Infantry Division in Osterode on April 11.

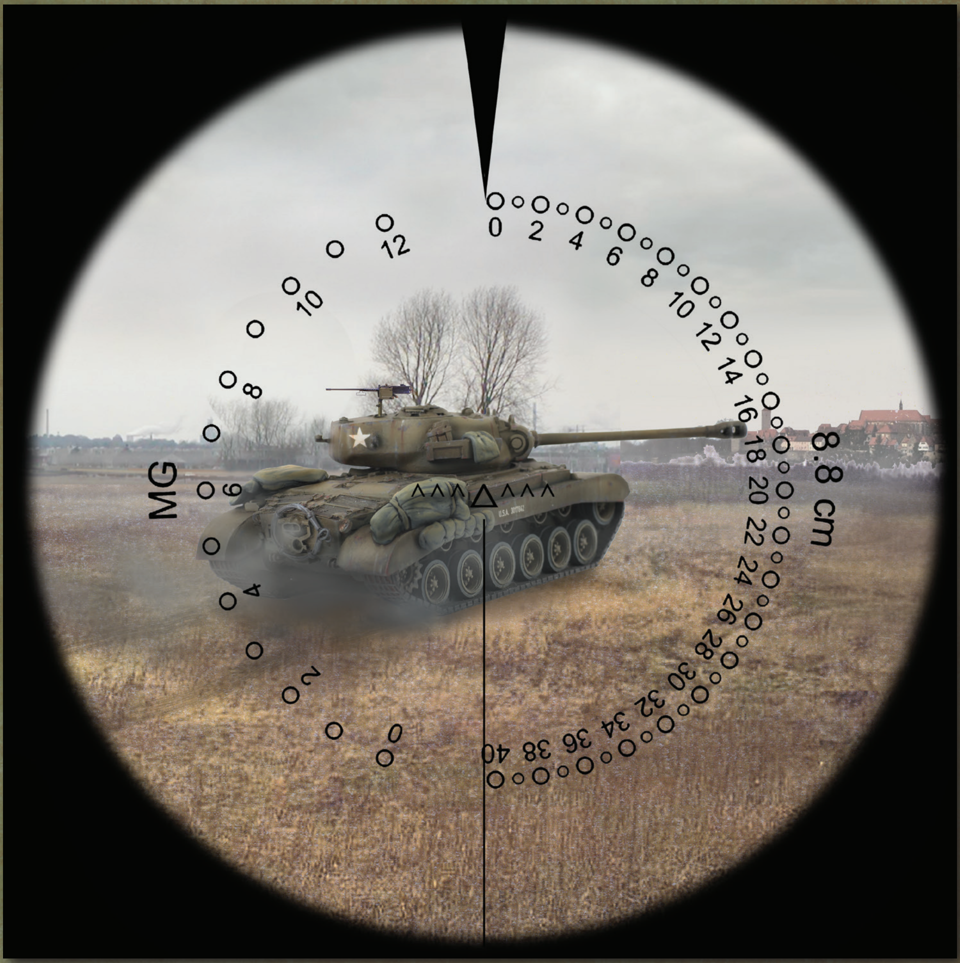
There were a few Tiger II tanks with the remnants of various Tiger battalions that were re-equipping in the Kassel area and which became trapped in the Ruhr Pocket in April 1945, surrendering in the Harz Mountains on April 17–19. These remnants included 3./sPzAbt 510 and 3./sPzAbt 511.

A second batch of T26E3 tanks arrived in Antwerp late in March 1945. They were delivered to the Ninth US Army, being divided between the 2nd Armored Division (22 tanks) and the 5th Armored Division (18 tanks). A subsequent batch of 30 tanks was allotted to Patton's Third US Army in April 1945, all going to the 11th Armored Division. This was the last unit equipped with the T26E3 to use it in combat. In the final weeks of the war, the T26E3 tanks saw very little tank-versus-tank fighting due to the collapse of the German armed forces. On April 10, Oberbefehlshaber West reported that it had only 44 tanks operational on the entire Western Front: 11 PzKpfw IV, two Panzer IV/70, 24 Panthers, and seven Tigers.

# TzF 9c TELESCOPIC SIGHT

The Tiger I's 8.8cm KwK 36 gun was aimed through a TzF 9c (*Turmzielfernrohr*) monocular telescope in place of the binocular TzF 9b used in the earlier versions of the tank. The telescope offered 2.5× magnification. The TzF 9c telescopic sight had an engraved reticle consisting of an aiming triangle in the center with smaller triangles on either side. The gunner placed the target at the apex of the center triangle. This reticle provided a limited stadiametric ranging capability which allowed a well-trained gunner to estimate the range based on the size of the target compared to the large triangle. The unit of measure was a graduation (*strich*) equaling 1m at 1,000m range with the larger triangle having sides of four graduations and the smaller triangle having sides of two graduations. So for example, an M4 tank was about 2.7m wide, so if the front view of the tank filled the center triangle, it was about 670m away. Needless to say, such calculations were too difficult in the heat of battle, so a gunner had to be so well trained that the procedure became instinctive. In actual practice, the gunner often used the coaxial machine gun to determine range. The series of triangles was intended to provide the gunner with a method to gauge the speed of a crossing target, but once again, this was too complicated to calculate during real engagements and depended on excellent training.

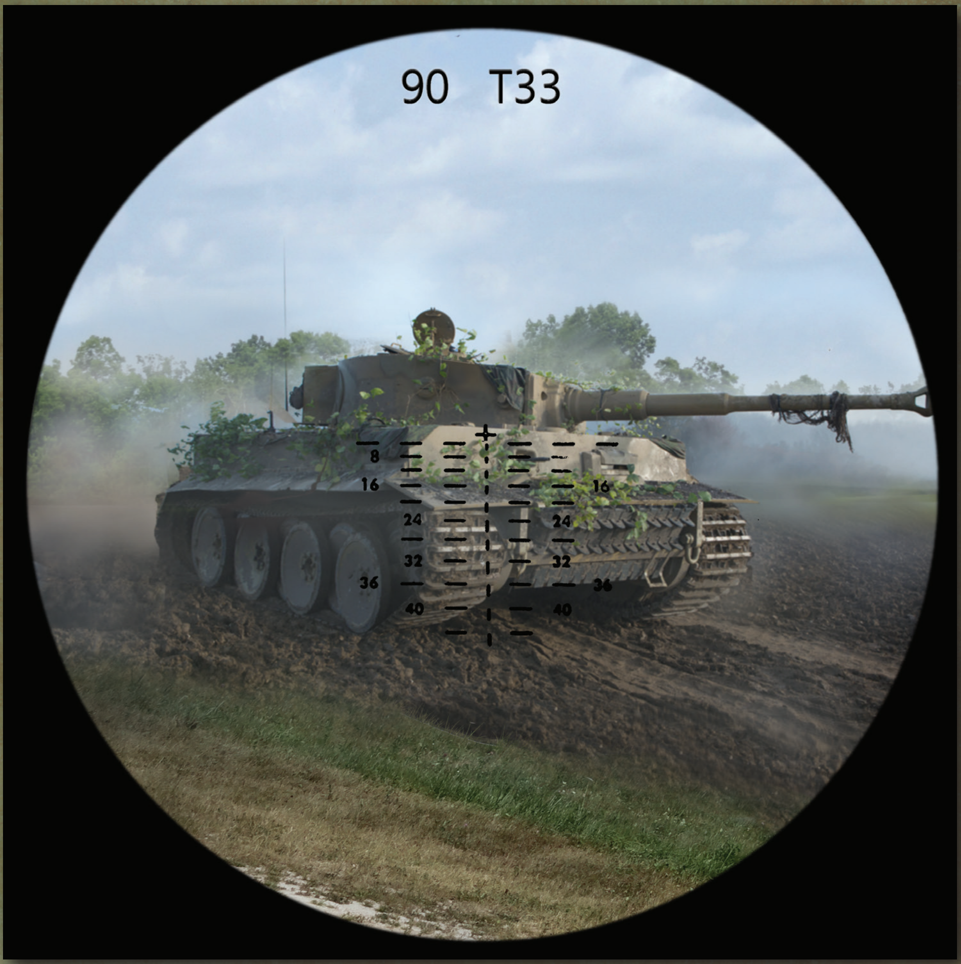
The small graduations around the periphery of the reticle were to help adjust the weapon depending on the weapon and type of ammunition being used. The gunner would dial in either the machine-gun or main-gun graduations, and set the range of the ammunition type at the apex of the upper triangle. This would adjust the telescope relative to the gun to provide for the modest change in elevation needed to compensate for the drop of the projectile at varying ranges.



# T26E3 TELESCOPIC SIGHT

The Pershing gunner could aim the main gun either using the M10F periscope or the M73 telescope. The M10F periscope's main advantage over a telescopic sight was that it provided the gunner with better situational awareness by allowing him to observe the terrain at low (1×) magnification, and then switch to high (6×) magnification for precise aiming. The periscopic sight was generally preferred when dealing with short-range targets or during engagements when rapid response was needed. The telescopic sight was preferred for engagement of precise targets at greater distances because it offered better resolution at longer ranges and tended to keep boresight better than the periscopic sight, which tended to be knocked out of alignment more easily by vibration. The view here shows the reticle in the telescopic sight.

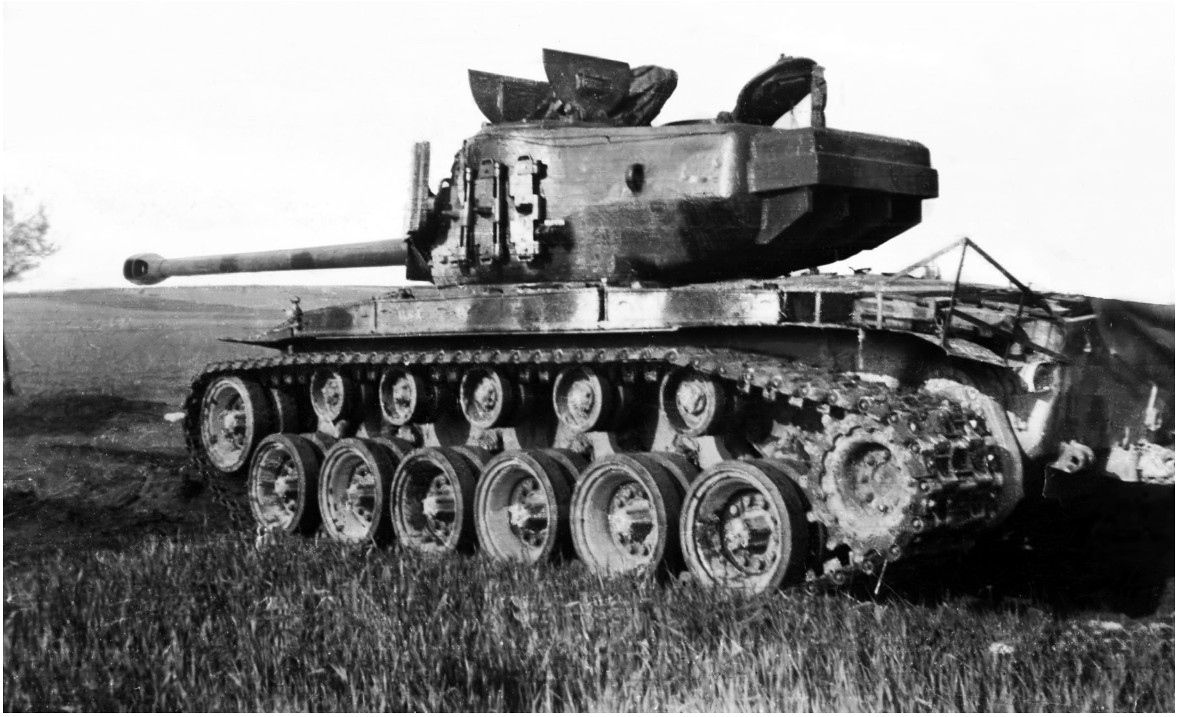
The telescopic sight contained several reticles that could be selected depending on the ammunition type, in this case the T33 armor-piercing round. The center lines capped by a "+" are the main aiming axis. The horizontal lines provide the necessary ballistic correction for engaging targets at longer range and are gradated in 400yd intervals; the "8" represents 800yd, the "12," 1,200yd, etc. Although the reticle here could be used for simple stadiametric range finding, US practice was for the tank commander to determine range through the use of binoculars with a range-finding reticle. The commander would then instruct the gunner which target to engage and would provide him with range data at the same time. The gunner would then adjust the horizontal line within the aiming "+" to the proper range.



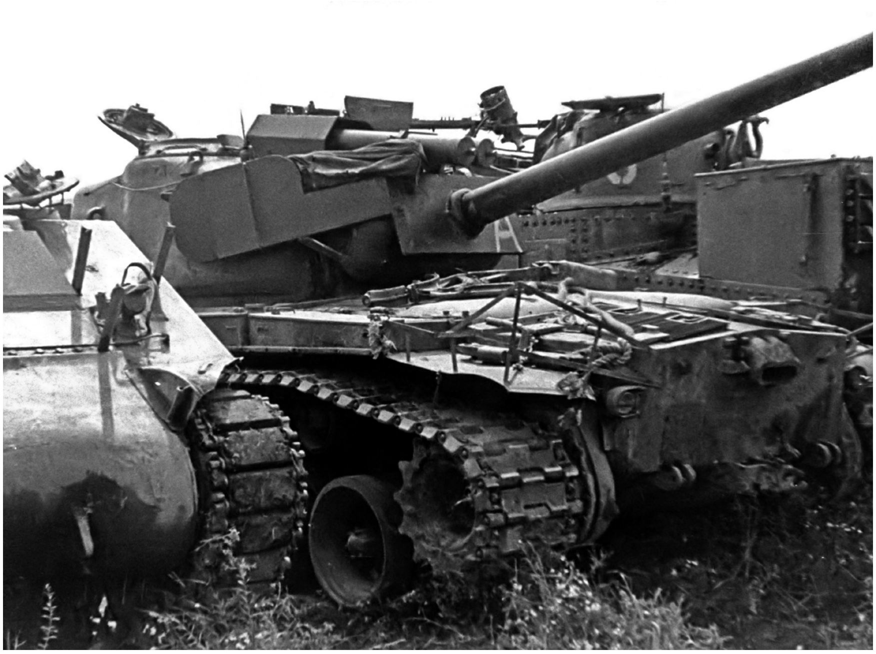
# THE SUPER PERSHING IN COMBAT

In mid-March, an additional T26 arrived in Germany, fresh from gunnery trials in the United States. This was the sole example of the "Super Pershing" to see combat. The Super Pershing sent to the ETO was the original T26E1 pilot tank that had been rearmed with a new long-barreled 90mm T15E1 gun. The T15E1 gun could penetrate 220mm of armor at 1,000yd at 30 degrees using the new tungsten-carbide HVAP round. On its arrival at the 3rd Armored Division, the divisional ordnance battalion decided to enhance the Super Pershing by adding additional armor plate to bring it closer to the protective level of the Tiger II. The 5 tons of applique armor were designed and fabricated, using layers of 40mm boiler plate on the hull, and a plate of 80mm armor taken from a Panther on the gun mantlet. The Super Pershing was delivered to Co. I, 33rd Armored Regiment, usually serving with Task Force Welborn.

A book by a 3rd Armored Division Ordnance officer, Lt Belton Cooper, indicates that the Super Pershing knocked out a German AFV near the Weser River. His account appears to refer to an engagement between sPzAbt 507 and the 3rd Armored Division on April 7, 1945 near Bad Karlshafen on the Weser. German accounts indicate that a Tiger II unit was indeed firing across the Weser at a US column, claiming to have knocked out 17 US tanks, a claim not backed by US records. The Super Pershing joined the exchange from a range of 1,500yd and hit a German "heavy tank," leading to a violent ammunition fire. Besides the Tiger II tanks, this company also had a Jagdpanther attached to it, and it would appear that it was this Jagdpanther that the Super Pershing knocked out, not a Tiger II.



This previously unpublished photo is one of the few taken of the sole Super Pershing during combat operations in Germany in April 1945. It shows the substantial counterweight welded to the rear of the turret to compensate for the lengthened gun barrel. Also evident is the stowage frame on the rear mud guard, a characteristic modification of 3rd Armored Division Pershing tanks.



The T26E4 Super Pershing sent to Europe was photographed after the war in a tank park in Kassel, Germany. Ordnance units of the 3rd Armored Division added additional armor cut from a Panther tank glacis to the gun mantlet to increase its protection level closer to that of the Tiger II. This view also shows the external gun equilibrator on the roof.

The memoirs of one of the crewmen of the Super Pershing, John P. Irwin, mention another combat engagement during the capture of Dessau on April 21. Irwin relates that the Super Pershing was confronted by a "Tiger" when rounding a corner in Dessau, but that the German tank missed with its first shot that flew high. A return volley by the Super Pershing ricocheted off the front armor, but when the "Tiger" attempted to climb over some rubble, the Super Pershing hit it through the belly, starting an ammunition fire. Irwin's identification of the Super Pershing's opponent has been questioned. There is no surviving evidence of any Tiger tanks still operating in this area, and such a claim runs into the perennial problem of tank misidentification by US troops. For example, sPzAbt 507 had lost its last Tiger II in Osterode on April 11, and sPzAbt (FKL) 301 had blown up the last of their Tiger I tanks at Sprockhövel on April 17. Another possible candidate, the Jagdtiger-equipped sPzJgAbt 512, surrendered at Iserlohn on April 15. Two Tiger companies, 3./sPzAbt 510 and 3./sPzAbt 511, had re-equipped with 13 Tiger II tanks at Kassel in late March and early April, but most were abandoned or surrendered in the Harz Mountains during April 17–19. If the Super Pershing did encounter a Tiger in Dessau, it was most likely a lone survivor from one of these two companies or an errant tank from some unidentified unit. The 3rd Armored Division G-2 intelligence reports for this day based on prisoner interrogations do not identify any Tiger unit participating in the fighting, though there is a curious mention of the capture of stragglers from "Panzer Transport West." It is possible that they were moving a lone tank and got caught up in the fighting. This duel remains a mystery unless further evidence emerges.

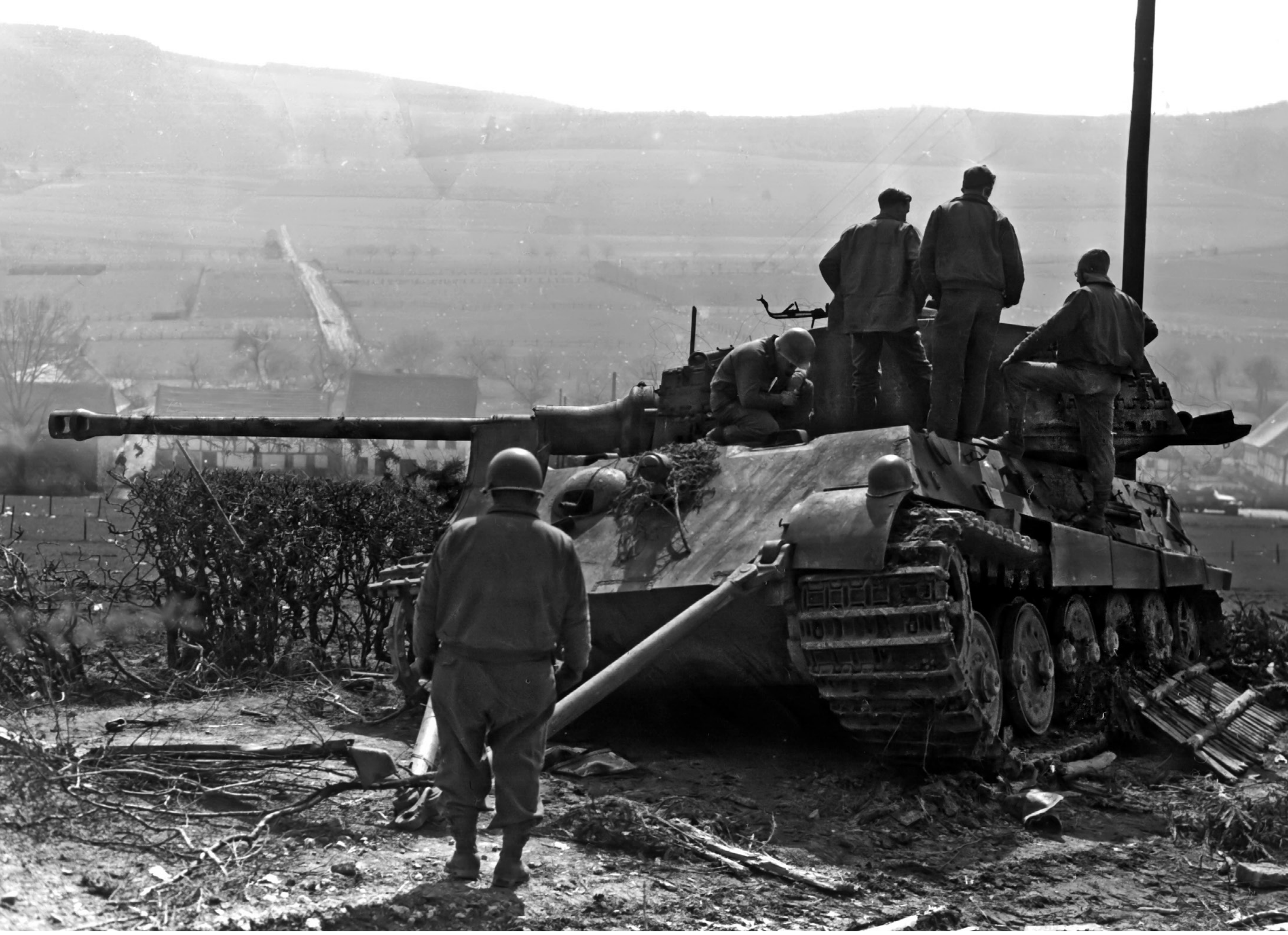
By the end of the war, 310 T26E3 tanks had been delivered to Europe of which about 110 were actually deployed with units. Only the tanks supplied in February 1945 saw extensive combat, however. The Pershing experience can best be summed up as "too little, too late."

# ANALYSIS

Contrary to popular legend, the Tiger tank played a minimal role in the fighting in the ETO against the US Army. The Tiger tanks in the West enjoyed a brief moment of glory in the summer of 1944 in Normandy with SS-Obersturmführer Michael Wittmann's rampage at Villers-Bocage. Following the Normandy campaign, however, Tiger tank battalions in the West were small in number and insignificant in their accomplishments. They became a phantom boogeyman for Allied tankers due to the ubiquitous use of the term "Tiger" to refer to virtually any German tank or armored fighting vehicle. They mainly faced the First US Army in the final eight months of the war and were entirely absent in some sectors such as the Saar and Alsace.

The modest impact of the Tiger tank battalions in the West after the summer of 1944 was due to a variety of factors. Not only were the numbers of Tigers small, but their low reliability and high maintenance demands made them scarcer still. As shown in the accompanying chart, only about 62 percent of Tigers were operational at any given time, and the figure was often much lower. Tiger operational strength in the West was usually in the vicinity of 50 tanks, peaking at over 100 tanks for a brief time during the July 1944 Normandy fighting and the initial phase of the Battle of the Bulge. It is worth noting that the Tiger availability rate was better in the West than on the Eastern Front, probably due to the proximity of the main assembly plant at Kassel.

Besides their small numbers and low availability rate, the performance of the Tiger battalions in the West against the US Army was disappointing. The two battalions that saw the most prolonged combat against the US Army claimed an exchange rate of only 2.5 to 1 compared to the overall Tiger battalion kill claims of 5.82 tanks per Tiger lost. This consisted of sPzAbt 506 claims of 401 kills (2.6 to 1) and sPzAbt

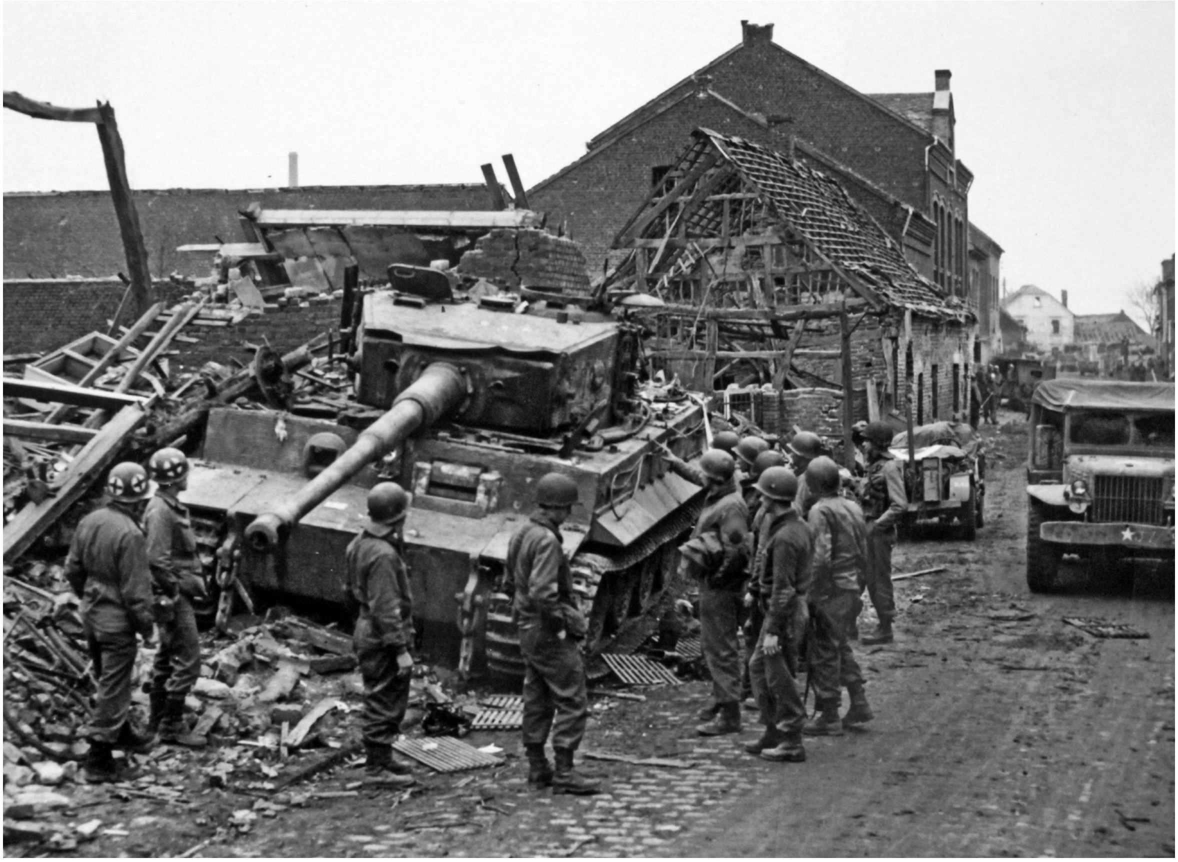


(FKL) 301 claims of 70 tank kills (2.3 to 1). The mediocre performance of these units in the West compared to their performance in the East can be attributed to several factors. To begin with, the discrepancy in crew quality was less pronounced in the West than in the East. By the time Tiger battalions began to encounter the US Army in the ETO in significant numbers in the autumn of 1944, German tank-crew quality was in decline due to the heavy loss of experienced tank crews in France in the summer of 1944 and the decline in training quality in the autumn of 1944 due to severe fuel shortages.

The Tiger proved most effective in combat in the 1943 campaigns when it was almost invulnerable to Allied tanks. By the summer of 1944, it began to face improved Allied guns including the British 17-pdr, Soviet 85mm gun, and the US Army's 90mm gun. A German report from 1944 recognized the difference:

> When Tigers first appeared on the battlefield, they were in every respect proof against enemy weapons. They quickly won for themselves the title of "unbeatable" … But in the meantime, the enemy has not been asleep. Anti-tank guns, tanks, and mines have been developed that can hit the Tiger hard and even knock it out. Now, the Tiger, for a long time regarded as a "Life insurance policy" is relegated simply to the ranks of a heavy tank … No longer can the Tiger prance around, oblivious to the laws of tank tactics. They must obey these laws, just as every other German tank must.

An unusually large amount of heavy armor was employed by the Wehrmacht in the Remagen fighting due to the proximity of the nearby Henschel plant in Kassel which manufactured the Tiger. This Tiger II tank was captured near Marmecke on April 11, 1945, by the 7th Armored Division during the reduction of the Ruhr Pocket and belonged to sPzAbt 506 of Panzergruppe *Hudel*. The remnants of this battalion surrendered in Iserlohn on April 14.



The scene on Köln-Aachener-Straße in Elsdorf on February 27 with US troops inspecting the disabled Tiger I, Nr. 201 from 2./sPzAbt (FKL) 301, that had knocked out T26E3 “Fireball” on the night of February 26/27. The Tiger I became trapped in rubble when it tried to back up.

Aside from its increasing vulnerability, the Tiger was arguably less well suited to the conditions in the West than in the East. Tiger tank tactics favored long-range engagements due to the power of their 8.8cm guns. Typical engagement ranges in the East in 1943 were in the order of 1,700–2,000m due to the more open terrain. In the West in the autumn and winter of 1944, engagement ranges were typically much shorter due to congested terrain and the urban-industrial sprawl along the western German frontier. The Tiger battalions saw most of their combat against the First US Army in the industrialized areas of western Germany such as the Roer region east of Aachen in November 1944 and the Ruhr region around Kassel in February–March 1945. The fighting in the Ardennes in December 1944–January 1945 took place in a less industrialized area, but the forested and hilly terrain also reduced engagement distances. The shorter engagement ranges reduced the Tiger’s long-range advantages while at the same time increasing its vulnerability to flank shots against its thinner side armor. There were more abundant terrain features that permitted US tanks to maneuver for side shots.

Tiger tanks in the West also suffered from the nature of their deployment. They were usually committed as part of a separate tank battalion attached at corps level rather than being attached to a Panzer division. As often as not, the German corps commanders had few Panzer reserves at their disposal, and so the Tiger battalions were often broken up into companies and sent off on separate missions in the hopes of fulfilling impossible defensive demands. Instead of being used as a concentrated mass, they appeared on the battlefield in small groups where they were vulnerable to attrition when pitted against much more numerous US tanks and antitank weapons. Furthermore, the tendency to split up the battalions on separate missions only served to exacerbate the Tiger's low durability since the scattered companies were more difficult to support with the battalion's very limited maintenance and recovery assets.

### Tiger operational strength in the West

| Date | Ready | In repair | Total |
|---|---|---|---|
| June 15, 1944 | 46 (87%) | 7 | 53 |
| July 7, 1944 | 46 (38%) | 74 | 120 |
| July 15, 1944 | 74 (60%) | 50 | 124 |
| August 1, 1944 | 62 (65%) | 34 | 96 |
| August 8, 1944 | 53 (93%) | 4 | 57 |
| September 12, 1944 | 0 | 0 | 0 |
| October 4, 1944 | 27 (51%) | 26 | 53 |
| October 16, 1944 | 36 (67%) | 18 | 54 |
| October 31, 1944 | 43 (88%) | 6 | 49 |
| November 15, 1944 | 71 (81%) | 17 | 88 |
| November 30, 1944 | 28 (45%) | 34 | 62 |
| December 15, 1944 | 79 (64%) | 44 | 123 |
| December 30, 1944 | 58 (50%) | 58 | 116 |
| January 15, 1945 | 64 (58%) | 46 | 110 |
| February 5, 1945 | 26 (59%) | 18 | 44 |
| April 10, 1945 | 10 (55%) | 8 | 18 |

Of the two types, the Tiger I was the more efficient design when operating in the West. Its 8.8cm gun, though less powerful than the longer weapon on the Tiger II, was still deadly enough to deal with virtually any Allied tank encountered in the West. Even if its armor was not as effective as in 1943, it was still a very tough opponent, especially in a head-on engagement.

### Tiger inventory and losses in the West*

| **Inventory** | **6-44** | **7-44** | **8-44** | **9-44** | **10-44** | **11-44** | **12-44** | **1-45** | **2-45** | **3-45** | **4-45** | **5-45** |
|---|---|---|---|---|---|---|---|---|---|---|---|---|
| Tiger I | 93 | 107 | 102 | 22 | 30 | 43 | 37 | 35 | 28 | 17 | 20 | 1 |
| Tiger II | 5 | 17 | 24 | 16 | 44 | 41 | 61 | 78 | 60 | 25 | 52 | 0 |
| **Losses** | **6-44** | **7-44** | **8-44** | **9-44** | **10-44** | **11-44** | **12-44** | **1-45** | **2-45** | **3-45** | **4-45** | **5-45** |
| Tiger I | 0 | 16 | 19 | 84 | 5 | 6 | 2 | 7 | 11 | 13 | 21 | 3 |
| Tiger II | 0 | 6 | 34 | 5 | 7 | 2 | 14 | 18 | 5 | 15 | 65 | 0 |

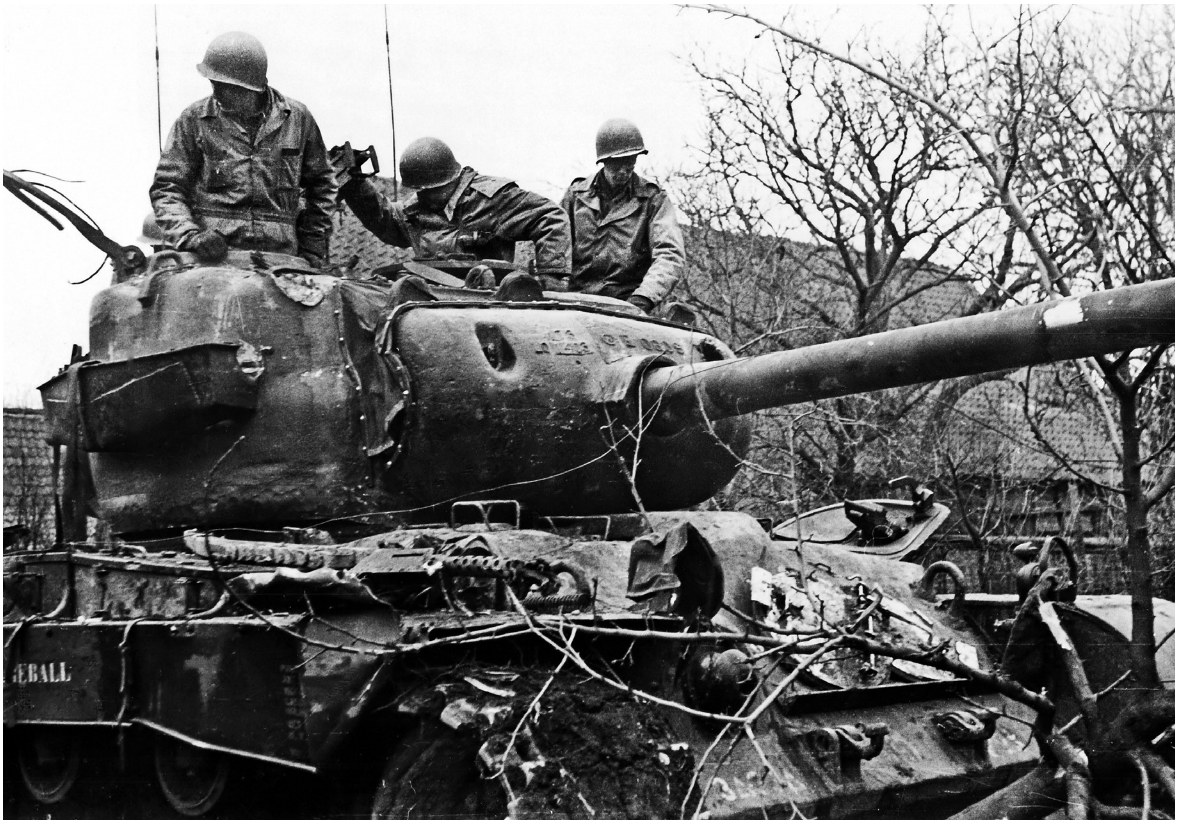
* Inventory figures for 1st of the month; includes operational and tanks in repair.

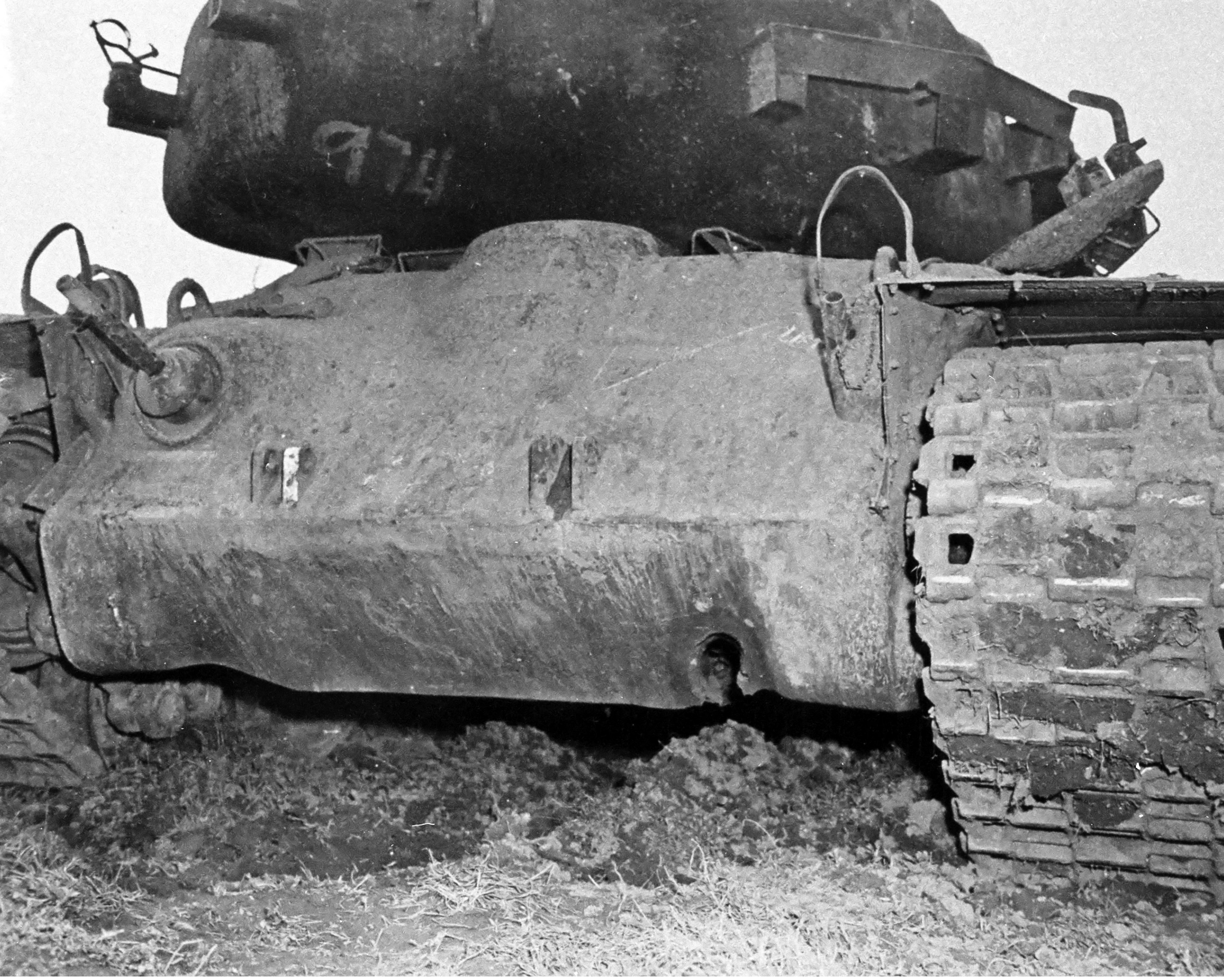
The Tiger I and Pershing were fairly evenly matched when comparing the essential triad of firepower, protection, and mobility. The Pershing had advantages in mobility and offered better reliability. It also had better firepower once HVAP ammunition became available in 1945. Nevertheless, engagements between these two types depended more on tactical circumstances than on technical features. The essential rule of tank-versus-tank fighting – "See first, engage first, hit first" – remained true in the rare clashes of Pershings and Tigers in 1945. A Tiger I won the first duel in Elsdorf when it spotted the Pershing first and got off three rounds in quick succession. The following day, the tables were turned when a Pershing spotted the second Tiger I moving outside the town, hitting it with four rounds before it could respond. The only Pershing completely written off in 1945 was ambushed by a Nashorn tank destroyer that it never saw.

The Tiger II was an extravagant waste in the West. Its thick armor and long-range firepower might have justified its limited operational mobility in the East, where it faced formidable opponents with thick armor such as the IS-2 heavy tank, and ISU-152 assault gun. It is interesting to note that more Tiger II tanks were lost in the West – 171 of the 309 Tiger II lost in combat – than in the East, even though more Tiger II tanks were deployed on the Eastern Front.

The Pershing and Tiger II were not evenly matched since the Pershing was in reality a medium tank like the Panther, and not a super-heavy tank like the Tiger II. The Tiger II had advantages in both firepower and armor. In the case of the

Ordnance personnel inspect T26E3 "Fireball" in late February after it was removed from Elsdorf and transported to the 3rd Armored Division maintenance yard in Düren. The gouge from the hit on the upper right corner of the turret is clearly visible. This tank was repaired and put back into service on March 7, 1945.





The only T26E3 written off during the war was No. 25, serving with H/33rd Armored in Task Force Hogan, 3rd Armored Division. On March 6, 1945 the tank was outside the village of Glesch when it was hit by an 8.8cm round in the lower bow, which set fire to the fighting compartment.

Tiger II versus Super Pershing, both types had similar firepower, the Super Pershing having a slight advantage due to the greater availability of HVAP ammunition. Regardless of the balance, it is doubtful that these types ever saw combat against each other in 1945.

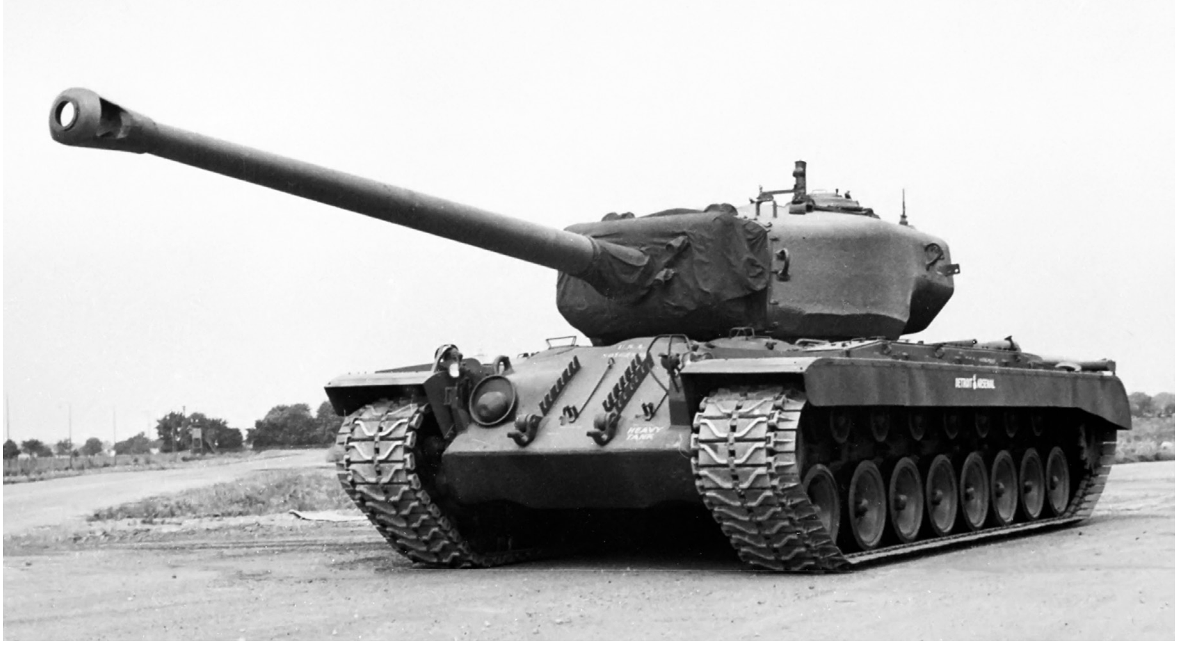
A First US Army report after the war summed up the Zebra Mission experience: "Unfortunately for this test, the German armor had been so crippled as to present a very poor opponent and the cessation of hostilities so soon after forming these companies precluded the gaining of any real experience."

**Pershing operational strength in the ETO in 1945**

| Date | Ready | In repair | Total |
|---|---|---|---|
| March 31, 1945 | 18 (90%) | 2 | 20 |
| April 15, 1945 | 29 (58%) | 21 | 50 |
| April 30, 1945 | 81 (84%) | 16 | 97 |
| May 6, 1945 | 98 (91%) | 10 | 108 |

# AFTERMATH

In terms of long-term influence, the Pershing was clearly the more significant type. The M26 was the forerunner of a family of US tank designs including the M46, M47, M48, and M60 that formed the core of the US tank force for a half-century through the Cold War. The postwar career of the Pershing is examined in another title in the Duel series (Zaloga 2010).



The Tiger II influenced postwar US Army tank designs such as the T30 heavy tank, armed with the 155mm T7 gun, the largest-caliber tank gun ever deployed on a US tank. Development work on the T30 petered out in the late 1940s due to lack of funding.

From a purely technical standpoint, the Tiger II had a modest influence on such designs as the French AMX-50. Even if its specific design features were not widely copied, the level of armor and firepower of the Tiger II strongly influenced postwar heavy-tank designs. For example, the US Army developed a number of heavy tanks in the late 1940s that were clearly inspired by the Tiger II. These did not go into production due to budget cuts in the late 1940s; but the requirement for a heavy tank returned in the early 1950s with NATO designs such as the American M103 and British Conqueror. These were viewed as antidotes to Warsaw Pact types such as the T-10, a belated Soviet reflection of the Tiger II.

While the M26 Pershing arrived too late to have much impact on the fighting in the ETO, it became the backbone of the US armored force in the years after the war. In a scene reminiscent of World War II, a column of M26 Pershing tanks of 3-2nd Armored Cavalry Regiment advance under cover of a P-47 Thunderbolt of the 86th Fighter Wing during exercises near Eberbach, Germany, on April 21, 1949.

# FURTHER READING

This book was prepared using a variety of archival and published accounts. The US National Archives & Records Administration II (NARA) at College Park, Maryland has an extensive collection of records of the Ordnance Department in Records Group 156 dealing with the development of the M26 Pershing. There are related documents from the perspective of the AGF and the Armored Board in RG 337. On the combat side, RG 407 contains the after-action reports for US Army tank units, and the author examined records dealing with the 2nd and 3rd Armored Divisions and other units. The separate Combat Interview collection in RG 407 was especially fruitful for the fighting at Elsdorf. NARA also has an extensive collection of captured German documents in the RG 242 microfilm collection, and the records of the Generalinspekteur der Panzerwaffe were especially useful. There are very good published accounts of the development of the Pershing and Tiger, with coverage of the Tiger being particularly extensive.

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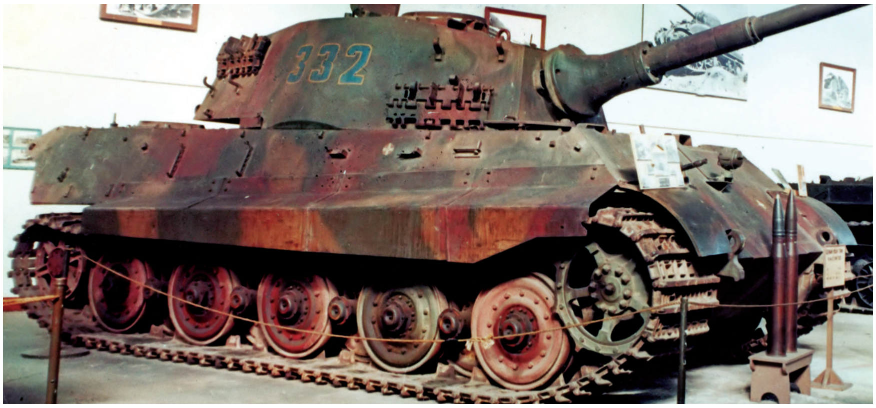

Tiger II No. 332 of 3./sSS-PzAbt 501 was abandoned near La Gleize in the Ardennes and later shipped to Aberdeen Proving Ground where it is depicted here in the late 1940s at the Ordnance Museum.

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**Author's note**

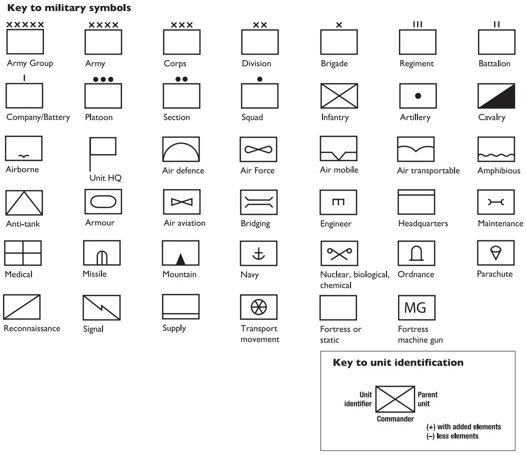
The author would especially like to thank David Doyle for his help obtaining photographs for this book. Unless otherwise noted, all photographs are from the author's collection.

**Editor's note**

In this book measurements are given in a mixture of metric and US customary units of measurement, depending on the context. The following data will help when converting between imperial and metric measurements:

1 mile = 1.61km
1km = 0.62 miles
1m = 1.09yd
1m = 3.28ft
1m = 39.37in
1yd = 91.44cm
1ft = 30.48cm
1in = 2.54cm
1cm = 0.39in
1mm = 0.04in
1kg = 2.20lb
1lb = 0.45kg
1oz = 28.35g
1g = 0.04oz

Title-page photograph: The second batch of T26E3 tanks was issued to the 9th Armored Division. Here, one of their tanks passes through the ruins of Euskirchen, Germany, on March 5, 1945.


Key to military symbols
Army Group
Army
Corps
Division
Brigade
Regiment
Battalion
Company/Battery
Platoon
Section
Squad
Infantry
Artillery
Cavalry
Airborne
Unit HQ
Air defence
Air Force
Air mobile
Air transportable
Amphibious
Anti-tank
Armour
Air aviation
Bridging
Engineer
Headquarters
Maintenance
Medical
Missile
Mountain
Navy
Nuclear, biological, chemical
Ordnance
Parachute
Reconnaissance
Signal
Supply
Transport movement
Fortress or static
MG
Fortress machine gun
Key to unit identification
Unit identifier
Parent unit
Commander
(+) with added elements
(–) less elements